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The Sixteenth and Seventeenth Centuries: The Dark Ages in English Economic History ? [1]

By F. J. FISHER

Traditionally, an inaugural lecture should be used by the new occupant of a University Chair to expatiate upon the nature, methods and significance of the subject which he professes. But those are matters which my predecessors at the London School of Economics have so illuminated, both by precept and by example, that I am forced to choose a more modest theme. My purpose is merely to offer some comments upon the present state of the study of modern economic history in this country and, in particular, to draw attention to a tendency which has recently developed for modern economic history to be split, somewhere in the eighteenth century, not merely into two periods but almost into two separate subjects.

Despite the convention that modern economic history begins with the sixteenth century, it has, of course, long been realised that some sort of dividing line was to be found somewhere or other in the eighteenth. But, until recently, historians working on either side of that line tended to plough similar furrows. Not only did they ask similar questions; to a surprising and even suspicious extent they arrived at similar answers. On either side of the line one could find the small land-owner always disappearing and the middle classes always rising; capitalism always growing; trade always expanding; the standards of living of the working classes always falling. And but two decades ago, almost perfect equilibrium was obtained; for it was discovered that the sixteenth and early seventeenth centuries had produced an industrial revolution to balance the more notorious revolution of the eighteenth and nineteenth. So great was the emphasis on the continuity of English economic life and on the basic similarities between the various centuries that at times one was led to doubt whether anything happened in the eighteenth century at all.

In recent years, as I see it, the trend has been in the opposite direction. The emphasis on continuity has been seriously weakened. But it has been weakened, less by changes in historical interpretation, than by changes in historical method. A generation ago, the main requirement of an economic historian was that he should be able to read, since most of his sources were literary. The archetype of the learned monograph consisted of a thin rivulet of text meandering through wide and lush meadows of footnotes. Though much derided, there was much to be said for that type of work. The brevity of his text made it difficult for an author to obscure his argument ; the copious quotations in his footnotes were often more entertaining than anything the author himself could contrive. Today, that type of monograph has gone. To some extent it has been the victim of economic progress, for it is one of the eternal verities of history that as societies become wealthy they are no longer able to afford pleasures that were well within their reach when they were poor. But, very largely, it has been the victim of a change in fashion. Today the first requirement of an economic historian is that he should be able to count, for his materials are largely statistical. The archetype of our modern fashion is one in which a stream, often a less than limpid stream, of text tumbles from table to table and swirls round graph after graph. In his inaugural lecture my predecessor asked that a greater use should be made of statistics in the writing of economic history. The Almighty has answered his prayer, not with a shower, but with a deluge.

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[1] A shortened version of an Inaugural Lecture given at the London School of Economics and Political Science, University of London, on 6th March, 1956, Professor R. H. Tawney in the chair.

So far as an amateur in these matters can tell, the application of statistical methods to the study of the English economy in the eighteenth and nineteenth centuries has yielded highly valuable results. It has enormously increased the precision of our ideas about that period ; it has in some measure increased the accuracy of those ideas. But, like most improvements, it has not been made without cost. The economic history of the eighteenth and nineteenth century is in some danger of becoming a specialized subject in the sense that only those with a peculiar mental equipment will be able to understand it. It is already becoming a specialized subject in the sense that, since quantitative methods can be applied only to such phenomena as are by their nature measurable, the economic historian is tending to contract his field of interest. In this respect it is perhaps relevant to notice the number of proposals that have recently been made for the development of social history; a discipline which seems to be designed, at least in part, to take over the field from which the economic historian is retreating. But the most serious cost of these new developments has, perhaps, been the break in the continuity of historical study between the sixteenth and seventeenth centuries on the one hand and the eighteenth and nineteenth centuries on the other. So long as literary sources are being used, historians in either of those periods can deal with very similar questions—and tend to get very similar answers. For literary sources often have their origin in the complaints of the disgruntled or of social reformers, and the literature of economic and social protest shows an almost monotonous uniformity throughout the ages. To take but one example, the lament that " artificers and labourers . . . waste most part of the day and do not deserve their wages, sometimes in late coming to their work and early departing therefrom, long sitting at their breakfast and their dinner . . . and long time at sleeping in the afternoon " might, so far as its substance is concerned, have been made in any of the last five centuries. Only the cadence of its phrasing suggests that it comes, as indeed it does, from the early sixteenth.

But once statistical sources have to be used the historian of the early modern period rapidly gets out of step. Not, to be sure, because of any objection to quantitative methods as such. In fact, the application of statistical techniques to the study of the early period has sometimes been taken almost to extremes. Thus, if I am correctly informed, the history of the Papacy has recently been re-written on the basis of two statistical indices—one of managerial efficiency and the other of religious zeal. It would appear that the index of managerial efficiency stood at a respectable 60 in both the sixteenth and seventeenth centuries, but that the index of religious zeal fell from a low 35 in the sixteenth to an even lower 25 in the seventeenth. It would, however, be dishonest for the historian to claim the credit for that particular application. Like so much that is bold and imaginative in the interpretation of the past, it is the work of an economist. Professed historians have worked at a lower level ; but they have worked assiduously and by now have accumulated a not inconsiderable volume of statistical data. Unfortunately, those data are more impressive in their volume than in either their quality or their range. They are largely confined to the fields of prices, government revenue and foreign trade; and even in those fields they are highly suspect. Having collected his figures, the historian is too often in the position of not knowing whether it is better to use them or to explain them away. Nor, in that quandary, does he often get much help from his literary sources ; for contemporaries wrote in an even greater statistical void than does the modern historian. Admittedly, the seventeenth century saw the birth of Political Arithmetic—" the art of reasoning by figures upon things relating to government ". But the figures even of Petty, the father of that art, were seldom more than guesses. And although it may have been mere coincidence that Petty's guesses were usually " very grateful to those who governed ", it was certainly no accident that the guesses of other people were normally highly favourable to themselves. One example of the wildness of contemporary guesses may perhaps suffice. In 1694 a committee in the House of Lords was debating a bill to allow, for the duration of the war, the importation of Italian raw and thrown silk via the Netherlands. Counsel for the London Silkthrowers, arguing for the importation of thrown silk, asserted that the throwers numbered nearly 200,000. Counsel for the London Weavers, arguing for the importation of raw silk, challenged that figure and the committee adjourned for a more exact total to be produced. When it reassembled it was presented, not with one total, but with two. The Beadle of the Silkthrowers claimed that there were 80,000 workers in the industry ; one of the Company's Assistants thought there were only 30,000. It is, perhaps, not surprising that the Lords were among the advocates of improved statistics at the end of the seventeenth century.

To the teacher and student, at least, this tendency for modern economic history to split virtually into two subjects, by asking different questions and using different methods, is a matter of some moment. Those undergraduates who, selecting economic history as their special subject, direct their attention mainly to the eighteenth and nineteenth centuries complain—and complain bitterly—that there is no precision in what they read or what they are told about the sixteenth and seventeenth. Those whose interests lie mainly in the earlier modern period complain that the history of the nineteenth century is full of every sort of figure except the human. Since quantitative data are also lacking for the Middle Ages, it might seem that all my argument amounts to is that, in this respect as in many others, the Middle Ages really lasted until the Glorious Revolution and that the problem might be solved simply by altering the periods into which history is conveniently divided. But this as a solution—if solution it be—is one which historians as a whole will not accept. If the student of the sixteenth and seventeenth centuries is deficient in the statistical techniques now being applied to the nineteenth, he is almost equally deficient in those more esoteric methods by which the truth about the Middle Ages is discovered. The position has been recently put, quite bluntly, by Professor Heaton in a passage which, too long to be quoted in full, may be summarised as follows: the great growth of population, production, trade, migration and capital investment of the eleventh to the thirteenth centuries is well established. The stagnation and recession in population and enterprise from about 1350 to at least 1450 is supported by much gloomy evidence. After at latest 1750 the emphasis is on the abnormal growth of population. The central problem becomes how to feed and clothe generations of children outnumbering by far those of any earlier times. Some countries failed to solve it, with consequent starvation, disease, falling living standards, revolution and emigration. The British solved it because sufficient landlords, farmers, manufacturers, merchants and others had the wit and resource to devise new instruments of production, evolve new methods of organising and administering production, and dig out unprecedented quantities of capital for fixed plant and operating expenses. But what of the period between 1450 and 1750? " In many respects this early modern period is the Dark Ages of economic history ".

Although this problem presents itself in its most acute form to those historians who are mainly concerned with such measurable things as the population, output, and the national income, it is not peculiar to them. If one may judge by the very interesting discussions which have arisen out of Maurice Dobb's *Studies in the Development of Capitalism*, the sixteenth and early seventeenth centuries are a period of some difficulty for the Marxists also. It is part of the Marxist creed that feudalism was overthrown by capitalism. But it is also generally accepted by Marxist historians that whereas feudalism was in an advanced state of disintegration by the end of the fourteenth century, the capitalist period cannot be said to open until considerably later.

Indeed, at a conference of British Marxist historians held in 1947, it was agreed that " the Tudor and Stuart state was essentially an executive instrument of the feudal class more highly organised than ever before. . . . Only after the Revolution of 1640–1649 does the state in England begin to be subordinated to the capitalists. . . . The revolution of 1640 replaced the rule of one class by another." Thus the Marxist is faced by the problem of finding for the sixteenth and seventeenth centuries an interpretation which, while permitting feudalism to disintegrate in the later Middle Ages as the evidence requires, will nevertheless preserve it to be slain in the seventeenth century as theory demands. One suggestion, that of Mr. Sweezy, is to call the system which prevailed in the fifteenth and sixteenth centuries " pre-capitalist commodity production " to indicate that it was the growth of commodity production which first undermined feudalism and then, somewhat later, after that work of undermining had been substantially completed, prepared the ground for capitalism. But it seems that any such suggestion, however reasonable it may superficially appear, leads only into the " Pokrovsky-bog of merchant capitalism " and will not serve for a revolutionary view of historical development. The alternative method —that of keeping feudalism alive by subtly changing its definition— has the demerit of keeping it alive too long. The problem, it would seem, is still unresolved.

Hence the historians of Tudor and Stuart England at present stand indicted by their fellows. Their labours, it would seem, have been outside the main field of historical enquiry. Whoever seeks to trace the development of the English economy through the ages, whether he is primarily interested in such matters as population, output and national income, or whether his main concern is with class structure, finds that he loses the thread of his story at some time in the fifteenth century and picks it up again only some two hundred years later. Between, to repeat the accusation of Professor Heaton, come the dark ages of economic history. That is an indictment which demands an answer.

One thing is clear enough. There can be no reasonable doubt that the sixteenth and seventeenth centuries saw an increase in the output of English agriculture and industry. The England of the early Tudors was rich in unused physical resources—idle land, unexploited woodlands, unworked minerals. By the end of the seventeenth century these resources were being used to a far greater degree ; more land was being cultivated ; woodlands were being either carefully managed to provide fuel or grubbed up to make room for corn and pasture ; the growth of mineral output had been spectacular in the case of coal and substantial in the case of iron, lead, and salt. Nor was expansion confined to primary production. There was a marked widening of the range of England's secondary industries with the introduction of new forms of woollen textiles and the development of the cotton and silk manufactures, glassmaking, papermaking, brassmaking, sugar refining and of other trades hitherto practised, if at all, only on an insignificant scale. And in the country's economic relationships with the outer world, although change was gradual, its cumulative effects were profound. At the beginning of the sixteenth century England was still mainly an exporter of wool and unfinished cloth to north-western Europe. By the end of the seventeenth she was not only exporting a wide range of woollen fabrics to all of Europe, the Near and Far East, Africa and America ; in addition she was sending both men and capital across the Atlantic and, with the aid of a vastly expanded mercantile marine, carrying on a substantial re-export trade in Asiatic and American produce. The problem is to relate that undoubted expansion to the demographic changes which accompanied it. From the taxation records which have survived it seems reasonably certain that the population of England approximately doubled between the late fourteenth and late seventeenth centuries; and although the evidence for the intervening years is inconclusive, it seems likely that most of that growth occurred after 1500. A growth of population in a country with abundant unused resources is likely to be accompanied by an expansion of output. The problem of the historian of Tudor and Stuart England is to decide whether the expansion so induced was also accompanied by progress; i.e. by an increase in income per head.

In the absence of statistical data, no direct approach to that problem is possible. Moreover, for a number of reasons, the most obvious of the indirect methods of approach do not yield conclusive answers. It might seem an elementary matter to compare the conditions which obtained at the beginning of a period with those obtaining at its end; but such a comparison is made difficult by the changes which occurred in the nature of historical records during the sixteenth and seventeenth centuries. In the early years of the sixteenth century whole categories of records which the medievalists find invaluable begin to peter out or disappear completely, partly as a result of the Reformation, partly as a result of the new administrative methods introduced by the Tudors. After the middle of that century there emerges another body of materials extraordinarily rich but significantly different from that which preceded it. Then, after the Restoration, those materials peter out in turn with the decline in the powers of the Privy Council and their place is taken by a new pamphlet literature and by the tax records which eventually develop into the statistical sources used by my more up-to-date colleagues. At first sight, it is true, the economy in 1700 looks very different from what it had been in 1500. But it does so partly because the most easily available records illumine different facets of it.

Something, one might suppose, could be deduced from changing habits of consumption. And it is clear that by the end of the seventeenth century the upper classes, and the more prosperous farmers and tradesmen, enjoyed a wider range of goods and services than had their ancestors of two hundred years before. But changing patterns of consumption do not necessarily mean that the incomes of consumers have increased. It was a constant complaint of the times that the new habits meant a decline in " hospitality " and at least one pamphleteer attributed the sluggishness of agricultural prices in the late seventeenth century to the fact that gentlemen paid for their new-fangled pleasures by going without their suppers and demanded that, in the public interest, all gentlemen should have suppers prepared for them whether they partook of them or not. Moreover, there is abundant evidence that some of the gentry paid for their new standard of living by dissipating their capital. Finally, there is the problem of the poor. Even at the beginning of the sixteenth century the lot of the poor had been hard. " Poor labourers, carters, ironsmiths, carpenters and ploughmen ", wrote Sir Thomas More, " by so great and continual toil as drawing and bearing beasts be scant able to sustain . . . get so hard and poor a living and live so wretched and miserable a life that the state and condition of the labouring beasts may seem much better and wealthier. . . . These silly poor wretches be presently tormented with barren and unfruitful labour, and the remembrance of their poor, indigent and beggarly old age killeth them up. For their daily wages is so little that it will not suffice for the same day, much less it yieldeth any overplus that may daily be laid up for the relief of old age." The little we know of the movement of real wage rates suggests that the lot of the poor was to deteriorate still further; and both the history of the Poor Law and the calculations of such men as King and Davenant suggest that by the end of the seventeenth century the poor may have constituted a larger proportion of the population than at the beginning of the sixteenth. The inequality with which the national income was distributed makes it dangerous to deduce changes in that income from changes in the consumption habits of the wealthier classes.

Nor is the detailed history of agricultural and industrial production as helpful as might be hoped. By the end of the seventeenth century, it is true, writers extolled the virtues of machinery as saving labour and increasing output per head. But labour-saving devices played an insignificant part in the economic changes with which we are concerned; and when they appeared they were bitterly opposed. From Starkey to Davenant all were agreed that the country's major economic problem lay in the under-employment of its labour force. Partly that under-employment was due to the seasonal fluctuations in agriculture, mining and transport; partly to the fact that many men were producing for local markets too small to keep them continuously occupied; partly to the high leisure preference which the inhabitants of poor countries so often possess. When the rewards for toil were meagre, the temptation to toil no more than was necessary for a bare subsistence was great. Whatever the relative importance of those different causes, the path of wisdom seemed to contemporaries to lie less in the provision of equipment to save labour than in the provision of more working capital to set that labour on work, in the creation of new markets to absorb its output, and in the provision of a legislative and economic environment in which the costs of voluntary leisure should be painfully high. The purpose of the inventions of the sixteenth and seventeenth centuries was less to save labour than to bring the forces of nature under greater control. In so far as national income per head changed during that period, it is more likely to have changed because of changes in the level of employment than for any other reason. And of all economic phenomena, the level of employment is one of the most difficult for the historian to assess.

Consequently, as is so often the case, the historian is driven back on to the coherency theory of truth. When the direct evidence relating to his problem is so scanty, can he construct a consistent and plausible argument from such material as he has ? It is in the light of that question that recent work on the economic history of the sixteenth and seventeenth centuries must be surveyed. Most of the recent studies in that field deal either with overseas trade, or with local history, or with the relationship between religion and economic life, or with the fortunes of the landed gentry. To what extent can materials collected on topics so diverse be used to illuminate the problem of economic growth ?

The relevance of foreign trade to that problem is obvious enough. It is the one field in which statistics are reasonably abundant, and despite their many imperfections there can be little doubt that foreign trade and shipping grew rather more rapidly than population ; and with them grew employment in the exporting industries, the mercantile marine, and in the increasing number of trades dependent upon imported raw materials. But foreign trade accounted for only a small fraction of the national output ; most production was for home consumption and it is in this field that the crux of our problem lies. Fortunately, it is above all on this field that the local historians for the most part cast their light. One of the difficulties which beset the student of the sixteenth and seventeenth centuries is the fact that most of his material is narrowly local. Not only is that obviously true of records which relate to a particular manor, or parish, or town, or county, or business ; it has constantly to be remembered that most of the general statements about the economy as a whole were made by men whose knowledge was essentially local. It is not until the very end of the seventeenth century that much effort was made by the government, or by economic interests, or by writers to bring together similar information for different parts of the country so as to afford a conspectus of the whole. It was not until the eighteenth that those efforts were crowned with spectacular success in the work of Defoe. For the period with which we are concerned the historian is constantly puzzled to know whether the progress or decay which he finds in any specific place is purely local, and to decide whether a process which appears to be continuous is in fact so or merely appears so because it occurs in different parts of the country at different times. In such matters only detailed work in local history can resolve his difficulties and in that sphere much detailed work remains to be done. But even from the work that has been done so far, two developments of major importance emerge. One is the growth of London from a city with a population of some fifty or sixty thousands to one with a population of half a million; a growth based partly on foreign trade, partly on manufacturing, partly on the provision of financial and professional services, partly on its role as the country's political and social centre. The other is the economic development of the hitherto backward west and north. That development was reflected in the growth of the textile industries of Devon, Lancashire and the West Riding, of the metallurgical and leather industries of the Severn Valley and the Black Country, of the potteries of Staffordshire and of coal, glass, and salt production on Tyneside; it was reflected also in the rise to commercial importance of Bristol and Liverpool with their easy access to Ireland, Africa and, above all, America. Nor, it seems, was that growth restricted to industry and overseas trade for, at least in the West, there was much land over which cultivation could be extended once the industrial areas provided a market for foodstuffs and once the introduction of artificial grasses facilitated the reclamation of hitherto barren land. By the end of the seventeenth century, if contemporaries are to be believed, those regions were characterised by cheap food because of agricultural improvements, by low wages because of cheap food, and by low poor rates because of the industrial demand for labour.

Those developments, taking place on opposite sides of the country, had one effect in common. They greatly stimulated internal trade. London did so primarily by virtue of the large market which its population offered to provincial producers. It was fashionable to bewail the growth of the capital as draining the life-blood of the country, and it may be that in some measure that growth did, in fact, depress industrial and mercantile activity elsewhere in southern and eastern England. In overseas trade the Southern and Eastern ports found it difficult to compete with London ; and there may be some substance in the argument that the metropolitan demand for food raised prices and wages in nearby industrial areas. At least, it is noticeable that by the later seventeenth century the major industries in the Home Counties were those such as spinning, knitting, lacemaking and straw-plaiting that depended on female rather than on male labour. But the benefits which flowed from the city's expansion were too obvious to be missed by more perceptive commentators. " It may be well worth the enquiry of thinking men ", wrote Davenant, " what truth there is in this common and received notion that the growth of London is pernicious to England; that the kingdom is like a rickety body with a head too big for the other members. For some people who have thought much on this subject are inclined to believe that the growth of the city is advantageous to the nation". Among those who thought thus was Houghton. " Let us," he wrote, " consider what the consequences will be of making London as big again. . . . In likelihood we should spend twice as many coals, which would double the shipping to Newcastle and that double the trade and people at Newcastle. . . . Whatsoever is said here for Newcastle will likewise serve for Norfolk for stuffs, stockings or fish ; for Suffolk and Cambridgeshire for butter; for the counties about London for most sorts of food ; for the West for serges, tin, etc. ; for Cheshire for cheese; for Derby and Yorkshire for lead, alum and several other ; and in short, for all counties and places in them; for I believe there is no county or place in England but directly supplies London, or at one hand or other supplies them that do supply it." In its turn the development of the North and West stimulated internal trade, not only because of the demand which the growing industrial population created for foodstuffs, but also because the industries upon which it was based were all producing for more than a local market.

This development of inland trade, it may be argued, was one of the most significant features of economic life under the Tudors and Stuarts. But it is difficult to speak of it with precision for, since most of it passed overland, it has left no statistical record. Fortunately, it is the habit of men to bewail their blessings and in some measure its story can be reconstructed from the complaints to which it gave rise. Under the Tudors the villain most frequently consigned to eternal damnation was " that caterpillar which cometh between the bark and the tree "—the middleman in primary produce. By the early seventeenth century he had come to be accepted as a necessary evil and criticism was being directed at shopkeepers who sold goods which they had not produced; but by the end of that century even they had acquired the respectability of a vested interest demanding protection from intruders. " The inland or home trade of England ", it was asserted in a slightly later broadside on that theme, " is an ancient establishment of business, form'd from the beginning in the mere nature and consequence of things, from the situation of places, the growth of materials, and other conveniences of the manufactures. This method of trade consists not in the bare producing or manufacturing the first principles of our trade, such as the wool, leather, metals and minerals, in which our country abounds, but in the buying and selling, carrying and re-carrying the goods from place to place for sale. This is very significantly called the circulation of trade, by which every part of the island is fully supply'd with what they respectively want. Trade going on in this happy progress, has for many ages increased to a mighty degree, so that manufactures of one kind or another are carried on in every county, shops are open'd in every corner, and in the most remote parts well furnished with goods of all needful kinds, as well of our own produce as of foreign importations. The shops, with the wholesale dealers and manufacturers who supply them are infinitely numerous, and being generally kept by the most substantial people, are the support of the whole trade of the kingdom ; these may be said to pay the landed men their rent, the government their taxes, the parishes their assessments, and the poor their allowances; they bear all the burthens and chargeable offices in the towns and parishes where they dwell." Such men, it was argued, clearly deserved and needed to be nourished and defended. "For now, to the infinite and unexpressible loss and discouragement of all these fair traders, they find this beautiful constitution of trade broken in upon and invaded by the frauds and arts of the hawkers and pedlars, and private clandestine traders, who, upon pretence of selling cheaper than the shops, insinuate themselves into the opinion of the buyers, which pretence also is a delusion in fact (except where smuggling, or dealing in prohibited goods, and other unlawful practices, may enable them to do so). On this occasion the fair trader, as well by wholesale as retale, as also the woollen and silk manufacturers of this kingdom, humbly represent; first that these people travelling or rather wandering from place to place, and having no legal abode, thereby avoid all the several payments and assessments which the fair tradesmen, who are house-keepers and settled inhabitants, are subjected to. Secondly, that by carrying their packs from house to house they invert the order of trade, supplant the fair dealer, and forestall the markets : and thus the scheme of our inland trade is broken, and the manufactures know no regular motion. The carriers are intercepted, and must in time cease to travel, for want of double carriage; or the foreign goods (which the shop-keepers must have) will come heavily charged with the said double carriage: the inns and houses of entertainment on the road (which are now, beyond comparison, the best in the world) will sink, and the whole commerce feel a sensible and terrible decay." And by the end of the seventeenth century the growth of inland trade was inspiring more important demands than that for the taxation or suppression of hawkers and pedlars, for it was the major cause of a spate of projects for improving harbours, roads and rivers.

The significance of this needs no elaboration. The growth of internal and foreign trade meant that an increasing amount of production was for more than local markets, and Adam Smith's explanation of how larger markets lead to the division of labour and the efficiency which specialisation engenders has long been an integral part of economic doctrine. Moreover, it would seem that production for a large market permitted more regular employment than production for a small, so that the changes which increased efficiency may well have served also to raise the general level of employment.

The changes which, during the same period, took place in the relationships between religion and economic life have inspired a literature to which justice cannot be done in any brief summary; but the nature of these changes can at least be crudely indicated by the contrast between two well-known prayers. The first is the Prayer for Landlords officially published in 1553 and then abandoned by the Anglican Church for ever:

> "The earth O Lord is thine, and all that is contained therein; we heartily pray thee to send thy Holy Spirit into the hearts of them

> that possess the grounds, pastures, and dwelling places of the earth that they, remembering themselves to be Thy tenants, may not rack and stretch out the rents of their houses and lands, nor yet take unreasonable fines and incomes after the manner of covetous worldlings, but so let them out to others that the inhabitants thereof may both be able to pay the rents, and also honestly to live, to nourish their families, and to relieve the poor.
>
> Give them grace also to consider that they are but strangers and pilgrims in this world, having here no dwelling place but seeking one to come. That they, remembering the short continuance of their life, may be content with that that is sufficient, and not join house to house, nor couple land to land to the impoverishment of others, but so behave themselves in letting out their tenements, lands and pastures that after this life they may be received into everlasting dwelling places."

The other is to be found among the papers of a financier who was considered shady even by the unexacting standards of the early eighteenth century in which he lived.

> " O Lord, thou knowest I have mine estates in the City of London and likewise that I have lately purchased an estate in fee simple in the County of Essex. I beseech Thee to preserve the two counties of Middlesex and Essex from fire and earth-quake. And as I have a mortgage in Hertfordshire, I beg Thee likewise to have an eye of compassion on that county. For the rest of the counties; Thou mayest deal with them as Thou art pleased."

Whatever the reasons for it, that transformation of Divine Grace from an instrument for perpetuating the uneconomic allocation of resources into a protection for economic enterprise and business foresight was among the intellectual achievements of the age. The influence of public opinion upon individual action is, admittedly, one of the imponderables in history. But it is surely not fanciful to suggest that, for men whose skins are not abnormally thick, the incentive to acquire wealth is strengthened by the belief that its possessor will deserve well of the Almighty and obtain social acceptance by all right-minded people.

Nor were such factors the only ones operating to create a social climate favourable to the entrepreneur. " To what purpose," wrote Weston, " do soldiers, scholars, lawyers, merchants and men of all occupations and trades toil and labour with great affection but to get money, and with that money when they have gotten it to buy land ? " It is by now a commonplace of the textbooks that, between the middle of the sixteenth century and the closing years of the seventeenth, sales by impecunious gentry and an even more impecunious Crown made land more easily available to moneyed men than ever before. And if land by itself was not a sufficient passport to social bliss, gentility was not out of reach. At first sight it is true, the status-system of the sixteenth and seventeenth centuries does not seem highly favourable to the rising man. As I understand it that system, at least in its cruder manifestations, was essentially biological. It was based upon a colour bar; though the relevant colour was that of the blood rather than of the skin. A man's status depended less on his own distinction than on the possession of an ancestor who had been distinguished before him. And the more remote that ancestor, and hence presumably the less of his blood which flowed through an Elizabethan's veins, the higher the status of that Elizabethan was. One of the most pathetic stories of the sixteenth century is that, I think, of the efforts of Lord Burleigh—a man of distinction by any rational criteria—to prove his descent from a Welsh princeling who probably never existed and who, if he did exist, was probably hardly distinguishable from the sheep of his native hills.

The advantages of a colour bar to those on the sunny side of it are too obvious to need exposition. But, as modern experience shows, the operation of such a bar raises certain philosophical problems. For the proposition that socially valuable qualities are the monopoly of a biological group is not one that is easily reconciled with experience. It was this dilemma which inspired, no doubt, the remark to be found in that curious work *The Blazon of Gentry*: "Jesus Christ was a gentleman, as to His flesh, by the part of His mother . . . and if He had esteemed the vain glory of this world (whereof He often said His Kingdom was not) might have borne coat-armour. The Apostles also were gentlemen of blood . . . but through the tract of time and persecution of wars, poverty oppressed the kindred and they were constrained to servile works." It was that dilemma which, solved in some countries only by revolution, was so magnificently dealt with in England by the College of Heralds. That College was set up to prevent men of low birth from passing as gentlemen. If contemporaries are to be believed, its labours produced exactly the opposite effect. To quote the well-known words of Sir Thomas Smith, Elizabethan ambassador and secretary of state, "as for gentlemen, they be made good cheape in England. For whosoever studieth the lawes of the realme, who studieth in the universities, who professeth liberall sciences, and to be shorte, who can live idly and without manuall labour, and will beare the port, charge and countenaunce of a gentleman, he . . . shall be taken for a gentleman : . . . (and if need be) a king of Heraulds shal also give him for mony, armes newly made and invented, the title whereof shall pretende to have beene found by the sayd Herauld in perusing and viewing of olde registers, where his auncestors in times past had bin recorded to beare the same : Or if he will do it more truely and of better faith, he will write that for the merittes of that man, and certaine qualities which he doth see in him, and for sundrie noble actes which he hath perfourmed, he by the authoritie which he hath as king of Heraldes and armes, giveth to him and his heries these and these armes, which being done I thinke he may be called a squire, for he beareth ever after those armes." Nor was that written in terms of disapproval. Posing the question whether that manner of making gentlemen is to be allowed or no, Smith came to the conclusion that " it is not amisse ".

Thus it is arguable that economic development in Tudor and Stuart England was more than the simple result of population growth. Quite apart from such external factors as the rise of Antwerp and the influx of American silver, the social climate was becoming more favourable to business men and, braced by that climate, business men seized their opportunities to build up a volume of internal and overseas trade that brought with it at least some of the benefits of specialisation and possibly raised the general level of employment. For that reason it is possible to think of this period in terms of economic progress as distinct from mere economic expansion. Yet a caveat must at once be entered. Even when all allowances have been made for the changes in the nature of the records, it is difficult to resist the conclusion that such progress as occurred was a feature of the seventeenth century rather than of the sixteenth—and of the later seventeenth century rather than of the earlier. The growth of London, of the extra-European and entrepot trades, and of western and northern industry were Stuart rather than Tudor phenomena. Although the new attitude to business enterprise was being reflected in the House of Commons at the end of Elizabeth's reign, for another generation it was to be denied full expression by the policies pursued by the privy council. Admittedly, the land market was brisk from the middle of the sixteenth century, but the most prominent purchasers in it seem to have been professional rather than business men. Partly, no doubt, that was because government service and the law did not permit the ploughing back of profits. But partly it seems to have been the result of a relatively under-developed economy in which the professions offered higher rewards than more mundane business. If, in the early seventeenth century, one wishes to find competition at its most fierce it is to be found, I suggest, not in trade or industry but in the conflict of jurisdictions between the Courts. That conflict is part of the constitutional history of England, and I would not insult my legal colleagues by implying that the lawyers who fought it were inspired by any motives other than the desire to protect the liberties of Englishmen. But the economic historian cannot but notice that, in their case, the financial rewards of civic virtue were considerable. Today, it may be, the stories of the large earnings to be made in the law are purely figments of envious imagination. In the seventeenth century they seem to have been better founded.

This distinction between the earlier and later parts of the period can obtain some support from other evidence. It is, for example, suggested by what we know of the movement of prices and wages. Admittedly, our data are but fragmentary and were influenced by changes in the supply of money. But a feature of the later sixteenth and early seventeenth centuries seems to have been a rapid rise in rents and agricultural prices combined with a much slower rise in wages and industrial prices. Such a combination suggests an economy in which agriculture was not expanding sufficiently to provide men with all the food, the farms and the employment that they needed and in which industrial development was too slow to make up for the deficiencies of agriculture. Nor is that suggestion implausible. Commercial statistics suggest that under Elizabeth foreign trade grew but little and that the later years of James's reign saw a series of major depressions. Coal-mining apart, there is little evidence of rapid industrial expansion before the second quarter of the seventeenth century. The main form of agricultural improvement was the enclosure of open fields and commons—it was estimated that two acres of enclosed land were worth three in the open fields or seven on the commons—but that was not always easy. In the more densely populated areas common rights were highly prized and were defended by their owners with great bitterness and, perhaps, with less obscurantism than the improvers alleged. The less densely populated areas, in which the institutional obstacles to enclosure may have been less, were often remote from the main centres of consumption and cursed with large areas of marshy or relatively infertile soil. It needed the greater urban and industrial markets of the seventeenth century, cheaper capital, and better methods of drainage and land reclamation to spread agricultural improvement throughout the country. Nor were the Fates always kind ; there is some evidence that bad harvests were particularly frequent in the late sixteenth and early seventeenth centuries and that the efforts of men were in some measure frustrated by the vagaries of the weather. Today it is unfashionable to think of Elizabethan England as a country in which population pressure was gradually reducing many to poverty and possibly diminishing the national income per head; but that was a view which some contemporaries held. The argument of over-population was repeatedly used by the advocates of American colonisation; there is no reason to doubt their sincerity; it is even possible that they were right. One reason why the middle and later years of the seventeenth century present a rather brighter picture may be that population growth was temporarily checked by emigration and bubonic plague, to be resumed only when agricultural, industrial and commercial expansion were more fully in their stride.

Thus it is possible for the historian of Tudor and Stuart England to give at least a tentative reply to the indictment of Professor Heaton; although he cannot measure the changes which occurred during that period he can at least suggest the directions in which affairs were moving. To the Marxist he has scarcely any reply at all. The most striking thing about the social analyses made by Wilson at the end of the sixteenth century and King at the end of the seventeenth was that their categories, unlike those used by Colquhoun at the end of the eighteenth, were essentially medieval—landowner and merchant ; clergyman and lawyer; petty trader and handicraftsman; seaman and labourer. Despite the contemporary murmurings about " monied men" neither of those authors—and neither of them was a fool—saw any need for any separate category of industrial or financial capitalists. Nor, perhaps, is that surprising. Most of the entrepreneurs who brought about the economic changes were small men readily included in the category of prosperous artisans or tradesmen. Those who provided the considerable fixed equipment in the mining, metallurgical or shipping industries were easily thought of as landowners or merchants, for that in fact is what they were. The effect of the economic changes of the sixteenth and seventeenth centuries was less to create new categories of men than to offer the existing categories new opportunities and to inspire them with a new spirit.

It is important, however, that an economic historian should not even seem to accept the suggestion that he is concerned solely with the story of change. If his interests were so confined the sixteenth and seventeenth centuries would indeed be an unrewarding field, for the economic changes which they saw were not great. A historian's function is, surely, to discover how men have behaved in the various environments within which they have lived. In that respect the historian of the Tudor and Stuart economies may perhaps claim some modest success. Whether his discoveries and conclusions are of interest and value to workers in other branches of social study is, of course, for them to say. But perhaps a historian may be permitted two comments. One is inspired by a remark recently made at dinner by one of my most distinguished colleagues in this University. It was, if my memory serves me, "Despite what Professor Fisher thinks, I say that history should be based on facts. If it is not based on facts it is sociology". And, in my experience, the economic historian working in the sixteenth and seventeenth centuries finds it particularly easy to hold sympathetic converse with sociologists. Whether or not it is because they have a similar attitude to facts, they share an interest in similar problems. I suspect that, if a social history of the eighteenth and nineteenth centuries ever develops, it will cover many of the topics with which the economic history of the earlier period now deals.

My final comment is inspired, like so many of my views on this subject, by the work of Professor Tawney. Just consider some of the more obvious features of the Tudor and Stuart economy. It was one in which the methods of production were simple and the units of production were small; in which middlemen and usurers were both hated and indispensable; in which agricultural progress was seriously impeded by the perpetuation of communal rights over land. The chronic underemployment of labour was one of its basic problems and, despite moral exhortations, among the mass of the people the propensity to save was low. Consider the comments made by the rector of Bodsworth on two of his parishioners in 1551. "These men earn twenty shillings a year each. Their masters with whom they dwell find them all manner of tools, so they spend nothing in getting their wages save find themselves in clothes. Either of them might save at the year end clearly five shillings and eightpence." And what was their reply? It was that they could not save a penny. Moreover, if contemporaries are to be believed, both the incentive to work and the propensity to save were being undermined by that crude form of social services known as the Elizabethan Poor Law. It was an economy heavily dependent on foreign sources for improved industrial and agricultural methods, and to some extent for capital, but in which foreign labour and business men were met with bitter hostility. In it ambitious young men often preferred careers in the professions and government service to those in business, and fortunes made in business were too readily converted into land. It was an economy in which monetary stability was periodically threatened and sometimes upset by unwise policies on the part of the government, and in which an embryo money market had its efficiency impaired by a glut of government paper that it could not digest. Men increasingly pinned their hopes on industrialisation and economic nationalism to absorb its growing population; but industrialisation was slow to come and the blessings of economic nationalism proved to be mixed. Such an economy may have little in common with our own; but at least some of its characteristics are still to be found in countries so different from ours that we call them underdeveloped. I would suggest—and in this I am fortified by the example of Professor Tawney's classic study of *Land and Labour in China*—that an understanding of the economy of Tudor and Stuart England is not the worst equipment for a study of the economically less developed parts of the modern world. In the last resort, perhaps the darkness of the sixteenth and seventeenth centuries depends upon the angle from which they are approached and upon the questions that are asked about them.

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The Heckscher-Ohlin Trade Model: A Geometric Treatment[1]

By Kelvin Lancaster

The particular approach to the general theory of international trade which was first made by Heckscher[2] and which was developed, and first published in English by Ohlin[3] has now become part of the basic structure of the theory. In a sense it has replaced the classical and neo-classical method of approach, in which comparative costs provided the starting point for the theory of international trade, and its *raison d'être*.

There is, of course, no real conflict between the Heckscher-Ohlin approach and that by way of comparative costs. Comparative costs, properly stated, emerge from the Heckscher-Ohlin model, and this model, in fact, goes behind comparative costs and establishes them as due to something more fundamental, differences in factor endowments.

As far as the theory of commodity trade is concerned, virtually all of the traditional structure of analysis could be carried out in terms of some elaboration of the comparative costs approach, such as the assumption of different, given, transformation functions for the trading countries. But the Heckscher-Ohlin model provided, for the first time, an analysis that was capable of integrating the factor markets into international trade theory in a satisfactory way, and much of its impact has been in this field. To a body of international trade theory which consisted primarily of propositions about the relative prices (or the results of certain relationships between the prices) of *goods*, there was now added a series of propositions about the relative prices of factors, culminating in the recent discussions concerning " factor price equalisation ".[4]

In its simplest (and, in many ways, most revealing) form, the Heckscher-Ohlin model concerns itself with a world which consists of a group of countries which use identical factors to produce identical goods by the use of identical production functions, these production functions having the property of constant returns to scale. These assumptions are necessary (but not sufficient) to result in the equalisation of factor prices throughout the world.

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[1] In writing this article, I have been greatly assisted by criticisms and suggestions from Dr. H. Makower, who bears, of course, no responsibility for any errors and omissions remaining.

[2] Eli Heckscher, " The Effect of Foreign Trade on the Distribution of Income," *Ekonomisk Tidskrift*, XXI, 1919, pp. 497–512. Also in *Readings in the Theory of International Trade*, 1949 (American Economic Association).

[3] Bertil Ohlin, *Interregional and International Trade*.

[4] For a bibliography of the material on this, see P. A. Samuelson: " Prices of Factors and Goods in General Equilibrium," *The Review of Economic Studies*, XXI (1), No. 54, 1953-54, p. 1. Factor price equalisation has emerged from the periodical literature and is discussed at length in J. E. Meade, *Trade and Welfare*, ch. XX, XXI, XXII, XXIII.

Now the factor price equalisation theorem, and so, by implication, the simple form of the Heckscher-Ohlin model, has been sharply criticised[1] for the specialised nature of these assumptions. In particular, the assumptions of identical production functions and of constant returns to scale have been attacked as " unrealistic ".

It is, of course, quite true that the Heckscher-Ohlin model, even in its more developed form, and certainly in its simpler form, is unrealistic. So are a great many models, in the physical, as well as the social sciences. Nevertheless, the Heckscher-Ohlin model occupies the very centre of international trade theory, for reasons unconnected with its realism and, indeed, strengthened by the very properties which have been subject to so much criticism.

In constructing a body of international trade theory, the first step must be to show why trade takes place at all, as a voluntary activity of both sides, and this problem was dealt with by Ricardo and Mill in a manner that, broadly speaking, satisfied economists for several decades.[2] In essence, Ricardian theory found the reason for trade in differences between countries, primarily differences of technique, skill, factors or all combined.

Given that trade depends, in a loose way, on differences, a good scientific enquirer should ask the question, " What is the *minimum* difference between countries which would be sufficient to explain the existence of trade ? "

This question does not seem to have been asked, let alone answered, until Heckscher,[3] but the Heckscher-Ohlin model provides the complete answer, that the minimum difference necessary is a difference in the relative endowment of factors between countries. Once the matter is seen in this light, as a problem of determining the minimum difference necessary for trade, the apparent vices of the Heckscher-Ohlin model are seen, in this context, to be virtues. The identity of production functions eliminates differences in knowledge and technique, the constant returns to scale eliminate differences in size, so that only one difference remains, a difference in proportions between qualitatively identical factors.

A second broad question to which the Heckscher-Ohlin model provides a satisfactory answer is that concerning the " future of trade " (in the rather abstract sense). In other words, since the ordinary comparative costs approach relied on accidents to explain the difference which initiated trade, accidents such as differences in knowledge or skill, there was a reasonable presumption that international trade could ultimately cease to exist: Portugal could learn to make cloth as cheaply (in terms of wine) as England.

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[1] See, especially, S. F. James and I. F. Pearce, " The Factor Price Equalisation Myth," *The Review of Economic Studies*, XIX (2), No. 49, 1951–52, pp. 111–120.

[2] Abstracting from the problem of " real " versus " comparative " costs.

[3] Eli Heckscher, *loc. cit.*

In the Heckscher-Ohlin model it follows clearly that international trade would continue even if there were perfect transmission of knowledge and techniques and absolute freedom for the costless migration of factors. For the identity of techniques is part of the model in any case, and factor price equalisation shows that there would be no incentive for factor endowments to become uniform, so resulting in the cessation of trade.

The Heckscher-Ohlin model, therefore, deserves a place at the centre of international trade theory. It is, in fact, *the* simple model of international trade when things are reduced to most elemental terms (not necessarily the most elementary terms), just as the two-commodity indifference curve is *the* simple model of consumer behaviour. It is for this reason that an attempt has been made in the present paper to express the character and fundamental properties of the model in reasonably simple geometric terms, using the Edgeworth box diagram as a basis.

No new conclusions are reached in the analysis,[1] and the method is derived from the extension of a construction devised by Rybczynski.[2] The only claim made for the paper is that it brings out the properties of the model in a reasonably neat and concise fashion, houses them under the one roof, and uses the geometrical technique in circumstances which simplify, rather than complicate, the matter in hand. The geometrical method chosen is capable of extension to a considerable degree, but the use here is confined to elucidating the more basic properties of the simple Heckscher-Ohlin model.

I

The Edgeworth Box Diagram

The particular type of geometric device which is usually known as the Edgeworth box diagram, or the Edgeworth-Bowley box diagram, has been described many times in the literature and the brief description given here is inserted in the interests of autonomy. There are, however, some properties of the diagram which are essential for the succeeding analysis, and these need emphasis.

The Edgeworth box is a device for illustrating the allocation of two resources, each fixed in total amount, between two types of use. It can be used to show the interrelationships between no less than twelve economic variables in terms of a plane diagram, provided that the relationships are of a certain kind.

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[1] Although the exact formulation of the relationship between relative factor endowments and complete specialisation of production (in Section III) seems to be new, and Section V is an essentially new analysis of the case of reversing factor intensities.

[2] T. M. Rybczynski, "Factor Endowments and Relative Commodity Prices," *Economica*, NS. XXII, No. 88, Nov. 1955, pp. 336–41.

Fig. 1 shows the particular version of the diagram that will be used in the Heckscher-Ohlin model. The rectangle *ABCD* represents an economy with fixed total resources of two factors (called labour and capital, for convenience) the total quantities of labour and capital being represented by *AC* (or *BD*) and *AD* (or *BC*), respectively. There are two "industries", producing two goods, *A* and *B*, the quantities of labour and capital used in the production of *A* being measured, for any point inside the box, by the vertical distance from *AD*, and the horizontal distance from *AC*, respectively. Then the vertical distance of the point from *BC* and its horizontal distance from *BD* give the quantities of the two factors used in the production of *B*. Any point inside the box, therefore, represents some allocation of the two factors between the two industries.

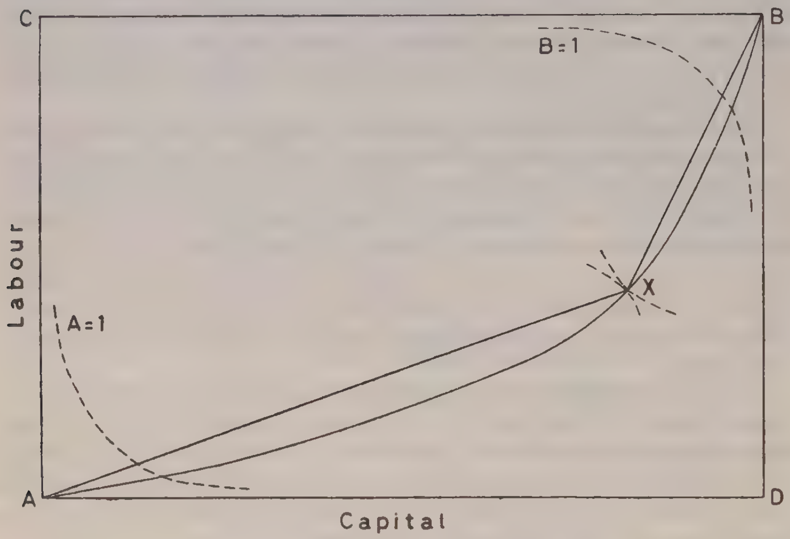

Figure 1

The actual outputs of *A* and *B* do not appear directly on the diagram, but are read off from isoquant lines which join factor quantities producing the same quantity of output. The isoquants $A=1$ and $B=1$ are shown in Fig. 1. All the production functions with which this paper is concerned are homogeneous, that is, with the property that all the isoquants are geometrically similar and can be obtained from one another by uniform radial expansion or contraction relative to the origin. The unit isoquant thus defines the production function completely, except for the scale of output.

In perfect competition, which will be assumed henceforth, the allocation of factors must be such that the ratio between the marginal productivities of the two factors in the production of *A* is equal to the ratio between their marginal productivities in the production of *B*.

The ratio in question is given by the slope of the isoquants, so that the condition is that the allocations must be such as to give points at which the *A*- and *B*-isoquants are tangential.

Points which satisfy this condition, such as *X* in Fig. 1, lie along a locus which is termed the " contract line ". If the isoquants are smooth, continuous, and convex to the origin, the contract line will be smooth and continuous, will pass through *A* and *B*, and will (in the case being considered here) lie wholly to one side or the other of the diagonal *AB*.

On which side of the diagonal the contract line lies is something which depends on the relative factor intensities of the two production functions. If *A* is always the more capital-intensive industry then, at the same relative prices for the factors in both industries (i.e. along the contract line), the ratio of capital to labour will be higher in *A* than in *B*. That is, the contract line will lie to the South-East of the diagonal *AB*, as in the diagram.

For the case in which *A* is the more capital-intensive industry at one set of factor prices, and the more labour-intensive at another, see section V.

PROPERTIES OF A RAY THROUGH THE ORIGIN

Consider the corner of the Edgeworth diagram in which the *A* origin lies and consider any ray *AX* through *A*. Then, due to the homogeneity property, *AX* cuts all *A*-isoquants at the same angle so that $\frac{MPL_A}{MPC_A}$ is constant along *AX*, where MPL_A, MPC_A represent the marginal productivities of labour and capital in the production of *A*, their ratio being the tangent to the isoquant.

If there are constant returns to scale, then, if the ratio of labour to capital is kept constant, production is proportional to the quantity of either factor. Along *AX*, the factor ratio is constant, and the distance *AX′* is proportional to the factor quantities at the point *X′*. Therefore, the production of *A* at any point *X′* along *AX* is proportional to the distance *AX′*. Note that this proportionality holds only for points along the *same* ray; there is no common linear measure between points on different rays.

Finally—and this is the property which is the key to much of the succeeding analysis—the *absolute* values of the marginal productivities of the factors are constant along *AX*, if there are constant returns to scale. For, since the production functions are homogeneous of the first degree, Euler's identity holds, so that

$$A = L_A \,.\, MPL_A + C_A \,.\, MPC_A$$

Where A = production of A
L_A, C_A = labour, capital used in production of A.

$$\frac{A}{L_A} = MPL_A \left(1 + \frac{C_A}{L_A}\frac{MPC_A}{MPL_A}\right)$$

Also, since, as has just been demonstrated, the ratio of output to the input of either factor is constant along AX, and the expression inside the bracket on the right-hand side above is also constant along AX, MPL_A, the only other quantity in the equation, must also be constant along AX. It follows that MPC_A is constant as well.

All the above properties hold, of course, for the B-isoquants relative to a ray BX through the point B.

DETERMINATION OF PRICE[1]

Since the points along the contract line represent equilibrium points under conditions of perfect competition, the payments to the factors must be the same in both industries. That is,

$$p_A . MPL_A = p_B . MPL_B$$
$$p_A . MPC_A = p_B . MPC_B$$

whence

$$\frac{p_A}{p_B} = \frac{MPL_B}{MPL_A} = \frac{MPC_B}{MPC_A}$$

This property is of extreme importance for the analysis which follows.

II

A SIMPLE HECKSCHER-OHLIN MODEL

The defining assumptions of the simple Heckscher-Ohlin model are as follows:

(1) All countries produce the same two commodities, using the same two factors, using processes defined by the same two production functions.

(2) The production functions for both goods involve the use of both factors, are homogeneous, convex, and with constant returns to scale.

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[1] More rigorously,

$$dA = \frac{\partial A}{\partial L_A} dL_A + \frac{\partial A}{\partial C_A} dC_A$$
$$dB = \frac{\partial B}{\partial L_B} dL_B + \frac{\partial B}{\partial C_B} dC_B$$

Along the contract line, $\dfrac{\dfrac{\partial A}{\partial L_A}}{\dfrac{\partial A}{\partial C_A}} = \dfrac{\dfrac{\partial B}{\partial L_B}}{\dfrac{\partial B}{\partial C_B}} = K$ (say). Also, since the factors are fixed in total supply $dL_B = -dL_A$, $dC_B = -dC_A$. Hence,

$$dA = \frac{\partial A}{\partial L_A}(dL_A + K\, dC_A)$$
$$dB = -\frac{\partial B}{\partial L_B}(dL_A + K\, dC_A)$$

So that, $\dfrac{dA}{dB} = -\dfrac{\dfrac{\partial A}{\partial L_A}}{\dfrac{\partial B}{\partial L_B}} = -\dfrac{p_B}{p_A}$ (from the ordinary equations of consumer demand)

(3) The production functions are such that the relative factor intensities are the same at all factor prices which are the same in both industries. That is, the labour-intensive good remains the labour-intensive good.[1]

(4) There is perfect competition in all markets and full employment of resources.

(5) There are no transport or similar costs, and no tariffs or other trade barriers.

(6) The relative endowments of the two factors vary from country to country.

(7) Consumer preferences are identical in all countries.[2]

Since each country has a fixed endowment of factors, and produces two goods, it can be represented by an Edgeworth box diagram similar to that of Fig. 1. Furthermore, any pair of countries can be represented by a pair of Edgeworth box diagrams, drawn to the same scale and located with equivalent edges parallel.

In Fig. 2, $ACBD$ and $A'C'B'D'$ represent such a pair of diagrams, corresponding to two countries I and II. These are drawn so that A, A' represent the origins for the A-isoquants, B, B' the origins for the B-isoquants, AC, $A'C'$ the endowments of labour, and AD, $A'D'$ the endowments of capital, in the two countries. As the figure is drawn $AD > A'D'$, $AC < A'C'$, so that country I has more capital and less labour than country II.

Now let X be some point on the contract curve of country I. In $A'C'B'D'$ (i.e. country II), draw $A'F'$ so that it is parallel to AX in $ACBD$, that is, so that $\angle D'A'F' = \angle DAX$, and draw $B'G'$ so that it is parallel to BX in $ACBD$. Let $A'F'$ and $B'G'$ intersect in X'. Then follows a remarkable and neat theorem which may be called the *Theorem of Corresponding Points*, to the effect that X and X' form a pair of points such that

(i) If X is on the contract line for country I, then X' is on the contract line for country II.

(ii) The marginal productivities of both factors, in both industries, are the same at X' as at X.

(iii) The commodity price ratio at X' is the same as at X.

(iv) The proportions in which the two goods are produced at X' will differ from the proportions in which they are produced at X, the proportions being such that each country produces more, relatively, of the good which is most intensive in its abundant factor, the supplies of both factors being exactly used up in both countries.

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[1] This assumption is dropped later, in section V.

[2] This is not a necessary condition for the truth of the corresponding points theorem, but is inserted on the principle of the minimum difference between the countries

This theorem sums up, very concisely, the important properties of the simple Heckscher-Ohlin model. Free trade equilibrium will occur with both countries " at " corresponding points, since such a pair of points satisfies the internal conditions of equilibrium in each country (from (i)) and represents the same terms of trade in both countries (from (iii)). Trade *will* take place since both countries have the same tastes but produce the two goods in different proportions at any given price level (from (iii) and (vi)). Finally, at whatever pair of corresponding points trade equilibrium takes place, factor prices will be equal in both countries (from (ii)). It also follows, from (iv), that each country will export the good which is intensive in its abundant factor.

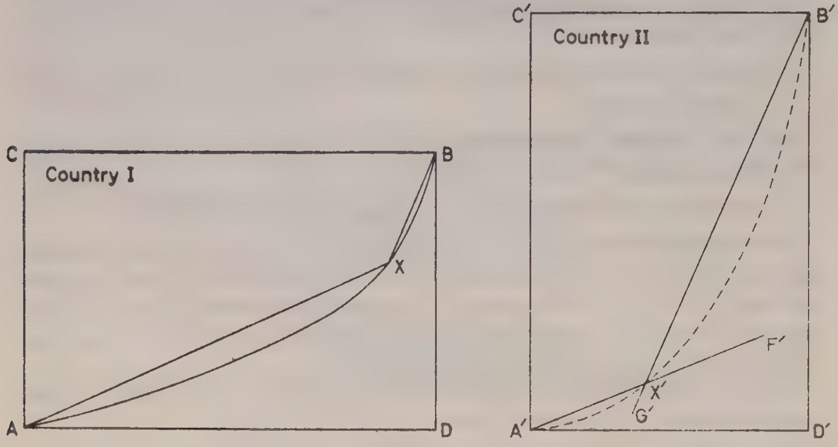

Figure 2

Although the formulation has been given in terms of two countries only, it is clear that it is equally true of any number of countries which satisfy the assumptions of the model.[1]

Proof of the Theorem of Corresponding Points

Since the production functions are identical for both countries, the set of A-isoquants spreading out from A' in $A'C'B'D'$ are the same as the set spreading out from A in $ACBD$. Therefore, since $\underline{/D'A'X'} = \underline{/DAX}$, those properties relevant to the A-isoquants which hold along AX also hold along $A'X'$.

Similarly, those properties relevant to the B–isoquants which hold along BX, hold also along $B'X'$.

From section I it follows, therefore, that the marginal productivities of labour and capital in the production of A are the same along $A'X'$ as along AX, and that the marginal productivities of labour and capital in the production of B are the same along $B'X'$ as along BX.

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[1] With more than two countries, any country is relatively abundant in a factor if the ratio of the endowment of that factor to the endowment of the other factor exceeds the ratio between the total world supplies of the two factors.

Since X, X' lie, respectively, on both AX, BX and $A'X'$, $B'X'$, the marginal productivities of labour and capital, in the production of both A and B, are the same at X' as at X.

In particular,

(*a*) Since X lies on the contract line of country I, the ratio between the marginal productivities of labour and capital, in country I, is the same in the production of B as of A. The same equality holds, therefore, in country II, so that X' lies on the contract line in country II.

(*b*) Part (ii) of the theorem (the equality of marginal productivities) follows immediately from the properties of rays through the origin.

(*c*) Since the commodity price ratio in country I is given by the ratio of the marginal productivity of a factor in one industry to that in the other, and both these marginal productivities are the same at X' as at X, it follows that the commodity price ratio is the same at X' as at X.

The proof of part (iv) of the theorem (which may seem the most intuitively obvious part) is simple enough, but requires some additional manipulation. Taking the two diagrams as in Fig. 2, apply $A'C'B'D'$ to $ACBD$ so that D' coincides with D, $D'A'$ lies along DA, and $D'B'$ lies along DB. The result is shown in Fig. 3.

Since the original diagrams had the properties $AD>A'D'$ and $BD<B'D'$, it is clear that, when $A'C'B'D'$ is applied to $ACBD$, A will lie to the left of A', so that AX will lie above $A'X'$, and B will lie below B', so that BX will lie below $B'X'$, giving the configuration shown in Fig. 3.

Referring to the figure,

$$AX=AP+PN+NX$$

Since PN is parallel to $A'X'$ and NX' is, at most, vertical, it follows that $PN \geqq A'X'$

Hence,
$$\begin{aligned} AX &\geqq AP+NX+A'X' \\ &> A'X' \end{aligned}$$

But, from section I, the production of A at the point X in country I is proportional to AX, and the production of A at the point X' in country II is proportional to $A'X'$. Since AX, $A'X'$ are directly comparable, it follows that the production of A is greater in country I than in country II. Similarly, it can be shown that the production of B is less in country I than in country II, by comparing $B'X'$ with BX. Hence it follows that the production of A, relative to the production of B, is greater in country I than in country II.

Now, as was pointed out earlier, in reference to Fig. 1, the model has been built up with A as the relatively capital-intensive good. Since it has also been assumed that country I is the country relatively abundant in capital, the above proof can be generalised into the statement that each country produces relatively more of the good intensive in its abundant factor.

The scale has not yet been taken into account, however. In Figs. 2 and 3, it has been assumed that each country has absolutely more of one factor, and absolutely less of the other, than the other country. Consider a third country, country III, which is similar to country II, but smaller in all respects—a shrunken version of country II. Such a country is shown as the box $A''C''B''D$ in Fig. 3.

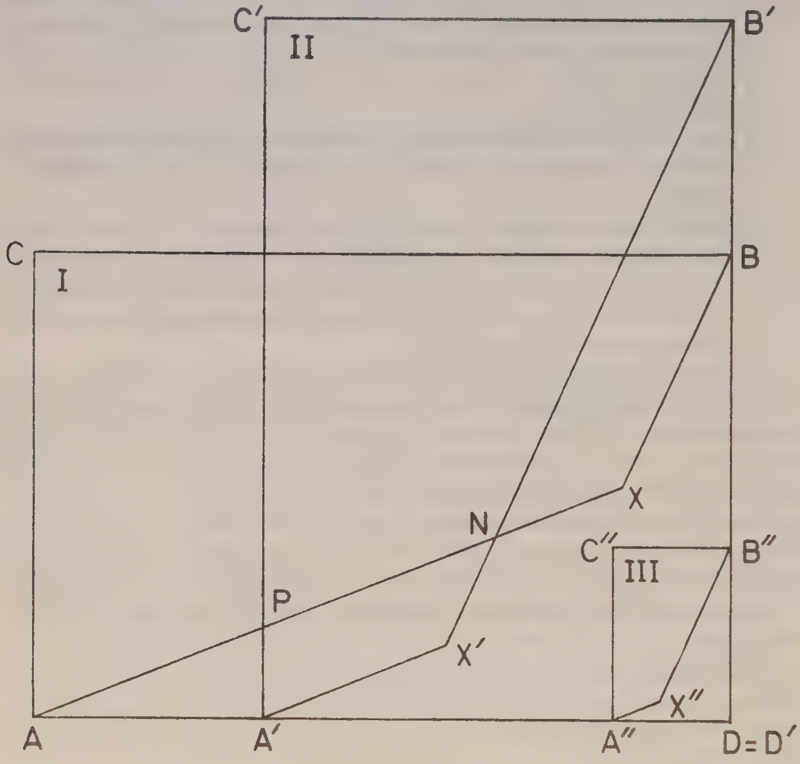

Figure 3

Since country III is similar in all respects except scale to country II, and there are no scale effects in production, all *ratios* in country III are equal to the equivalent ratios in country II. In particular, the ratio of production of A to B is the same in III as in II, and therefore less than the ratio in I. This proves part (iv) of the theorem for the case when the countries are not of the same " size ".

III

Specialisation and Migration

In the preceding analysis it was assumed, in the construction that defines the corresponding points in the two countries, that the lines $A'F'$ and $B'G'$ in country II do, in fact, intersect inside the box. This case is the one usually discussed, because it is, in many ways, the more significant.

It can, and will, be shown, however, that there are points on the contract curve of either country which have no corresponding points in the other country, and that it is possible for there to be no corresponding points between the two economies.

Consider Fig. 4 which is, basically, the same as Fig. 2. To the point X in country I there corresponds the point X' in country II. Now examine what happens as the point X moves down country I's contract curve in a South-Westerly direction. As this happens, X', the corresponding point to X, moves in the same direction along country II's contract curve, with $A'X'$ keeping parallel to AX and $B'X'$ to BX. Eventually a point (R) will be reached in country I where $\angle DBR$ in I is equal to $\angle D'B'A'$ in II. That is, the corresponding point to R will be A'. Since $AC/AD < A'C'/A'D'$, R will lie well inside the box $ACBD$. Clearly, the points on the segment AR of I's contract curve have no corresponding points on II's contract line.

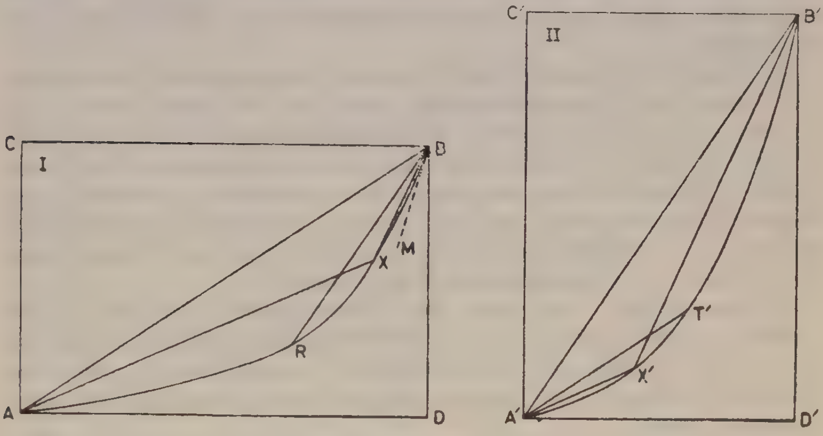

Figure 4

Similarly, by moving X' in a North-Easterly direction along the contract line of country II, a point will be reached (T'), at which $\angle D'A'T' = \angle DAB$ which corresponds to the point B on the contract line of country I, so that the segment $T'B'$ of II's contract line has no corresponding points on I's contract line.

Hence, provided the relative factor endowments of the two countries differ at all (i.e. $AC/AD \neq A'C'/A'D'$), there will be points, in the segments AR and $T'B'$, which lie on the contract curve of one country, but have no corresponding points on the contract curve of the other.

Now consider what would happen if the divergence in the relative factor endowments between the two countries increased. Suppose that the ratio of capital to labour in country II decreased, so that

$A'D'$ declined relative to $A'C'$. Then the angle $D'B'A'$ would become smaller and, since $\angle DBR = \angle D'B'A'$, R would move along I's contract curve towards B. Eventually, when the factor proportions in II were such that the angle $D'B'A'$ was just equal to the angle DBM (the tangent to I's contract line at B), R would coincide with B. Then, since $\angle D'B'T'$, which must be equal to $\angle DBM$, would be equal to $\angle D'B'A'$, T' would coincide with A'. At these factor proportions, the segments of the two contract curves, RXB and $A'X'T'$ on which the corresponding points lie, would have contracted into the two corresponding points A' and B.

Now the angle $\angle DBM$ must be greater than zero for, if it were not, it would imply that there existed a marginal reallocation of resources at B in which labour would be given up to industry A by industry B with no capital in exchange. Thus, since $\angle DBM > 0$, there exists some ratio of labour to capital in country II (such that $\angle D'B'A' = \angle DBM$) for which there are no corresponding points between the two economies.

Consider the commodity price ratios on the segments of the contract line which have no corresponding points in the other country. In Fig. 4, T' in II is the corresponding point to B in I. Now any point on the segment $T'B'$ in II represents a ratio of the price of A to the price of B (since it represents the production of more A relative to B) higher than at the point T', and so higher than at the point B, or any other point in I. Similarly, points along AR in I represent a higher price for B relative to A than any points in country II.

In other words, if the price ratio in trade leads to a point in one country to which there is no corresponding point in the other country, the second country will always specialise in production, using the whole of its resources to produce the good most intensive in its more abundant factor.

Factor prices need also to be considered. At the point T' in II, factor prices are the same as at the point B in I (since these are corresponding points). Any point in the segment $T'B'$ of II represents a higher ratio of labour to capital in both industries (and thus a lower price for labour) than at T', so that, if trade results in a situation in which country II is producing at a point along $T'B'$ (so that country I is specialising), the wage of labour will be lower, and the return to capital higher, than in country I.

That is, if trade results in specialisation by one country, the wage of that country's more abundant factor will be lower, and the wage of its less abundant factor higher, than in the other country. Consequently, if there is free migration of factors, such migration will continue until the relative factor proportions are such that the two countries have just one pair of corresponding points (e.g. B, A' in Fig. 4). Then, since factor prices will be equalised, there will be no further incentive for migration.

IV

THE EQUIVALENCE BETWEEN COUNTRIES IN TRADE AND A SINGLE ECONOMY

Although it is not a difficult matter to show the equivalence between a pair of countries engaged in trade and a single economy, under certain assumptions, it is quite interesting to have this demonstrated in a simple geometric fashion. What will be shown is that, over the range of commodity price ratios represented by the set of corresponding points, a pair of countries, with the properties which have been analysed in this paper, is exactly equivalent to a single country whose endowment of labour and capital is equal to the sum of the endowments of the two individual countries.

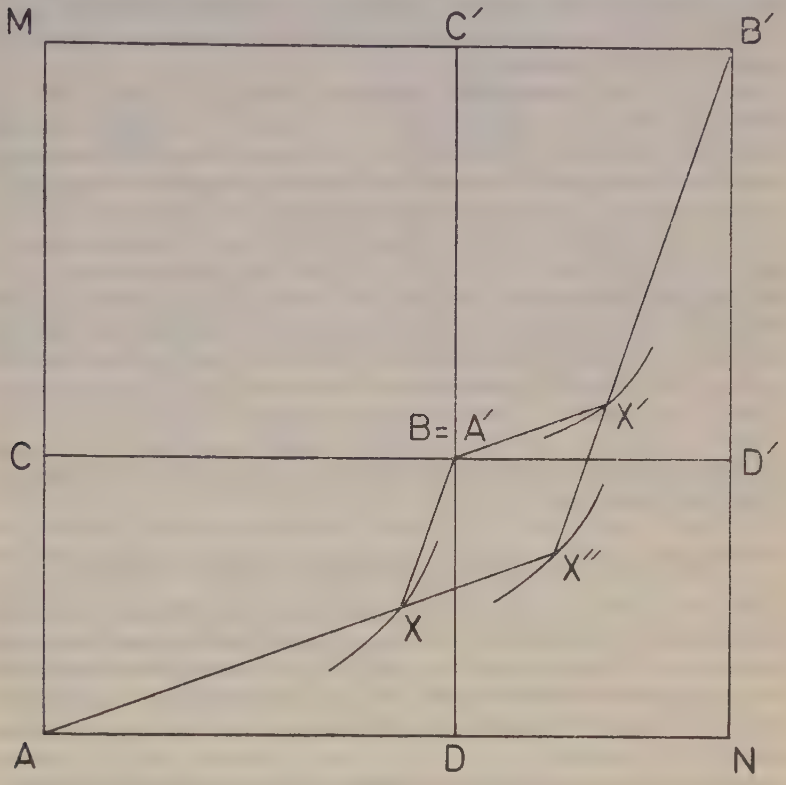

Figure 5

Let *ACBD*, *A′C′B′D′*, represent the two countries. Apply *A′C′B′D′* to *ACBD* so that *A′* coincides with *B*, *A′C′* lies along *DB* produced, and *A′D′* lies along *CB* produced. Produce *AD* to meet *B′D′* produced in *N*, and produce *AC* to meet *B′C′* produced in *M*. The construction is shown in Fig. 5.

Since $AM = AC + CM = AC + A'C'$, AM represents a quantity of labour equal to the combined labour resources of the two countries, and AN, similarly, represents the combined capital resources of the two countries. Then, since there exists (in $ACBD$) a series of isoquants spreading out from A and (in $A'C'B'D'$) a series of B-isoquants spreading out from B', the rectangle $AMB'N$ is the Edgeworth diagram of an economy whose factor resources are equal to the sums of the factor resources of the two countries.

Let X, X' be corresponding points in $ACBD$, $A'C'B'D'$. Let AX produced meet $B'X'$ produced in X''. Then X'' has the properties which are common to X and X' (i.e. the same factor and commodity prices) and must lie on the contract line of the combined economy.

Also, since X, X' are corresponding points, BX is parallel to $X'X''$, and $A'X'$ is parallel to XX''. Thus $XBX'X''$ is a parallelogram, so that $XX'' = A'X'$ and $BX = X'X''$. Now the production of A in the combined economy is given by AX'' but this is equal to AX plus $A'X'$, that is to the sum of the quantities of A produced by the two countries. Similarly the production of B in the combined economy is equal to the sum of the quantities of B produced by the two countries.

Over the range for which corresponding points exist in the two countries, therefore, they are, in trade, exactly equivalent to a single country with factor endowments equal to the sum of the endowments in the two countries.

V

THE CASE OF CHANGING RELATIVE FACTOR INTENSITIES[1]

The model has, so far, been based on the assumption that the relative factor intensities of the two production functions remained the same at all factor prices, so that the labour-intensive good was always the labour-intensive good. That this assumption is not always valid, and some of the other possibilities and their results have been pointed out by Lerner.[2]

Suppose that representative isoquants for the two production functions are drawn on the same diagram, relative to the same origin. Since the production functions are homogeneous of the first degree, all isoquants of the same production function have the same shape, so that any isoquant from one function may be compared with any isoquant from the other. Let there be chosen a pair which cross at least once, which must be the case if the two production functions are not identical.

If, as in Fig. 6, the isoquants do not cross more than once, then points on the two isoquants which have parallel tangents (i.e. the same factor price ratios), such as A and B in the diagram, are always such that the slope of *OA* (the ratio of factor 1 to factor 2 in the production of *A*) is greater than the slope of *OB* (the ratio of factor 1 to factor 2 in the production of *B*), so that *A* is always more intensive in factor 1.

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[1] The argument of this section is more compressed than that of the preceding sections, and could be omitted in reading by those interested only in the simplest version of the Heckscher-Ohlin model.

[2] A. P. Lerner, " Factor Prices and International Trade ", *Economica*, Vol. XIX, No. 73, Feb. 1952, pp. 1–15.

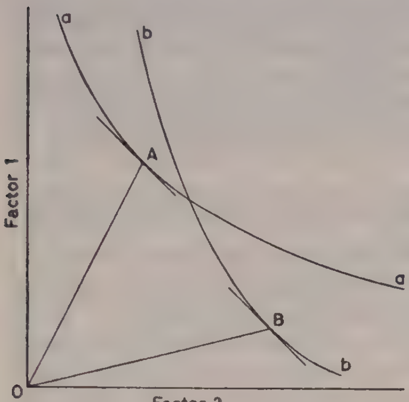

Figure 6

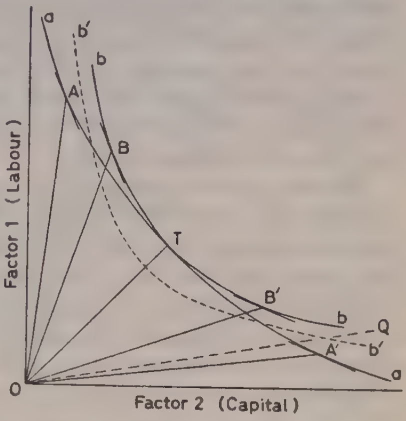

Figure 7

If, however, as in Fig. 7, the isoquants cross more than once (as *aa* and *b′b′*) or are tangential (as *aa*, *bb*), then for two pairs of points with parallel tangents, such as *A*, *B* and *A′*, *B′*, at opposite ends of the isoquants, *OA* has a steeper slope than *OB*, but *OA′* has a more shallow slope than *OB′*. At a low price for factor 1 relative to factor 2, therefore, *A* is relatively more intensive in factor 1 than is *B* but, at a high price for factor 1 relative to factor 2, the relative factor intensities of *A* and *B* are reversed.

The first case, that of a single intersection of the isoquants, is generally accepted as the usual case, one industry being always more intensive in one particular factor than the other. As will become apparent from the analysis to follow, all cases of trade between two countries with factor endowments which are not very widely different can be treated as falling within this case,[1] the analysis of which has been the concern of the preceding sections of the paper. Nevertheless, the other case, in which the relative factor intensities change, presents analytical points of very great interest, and the remaining analysis will be concerned with them.

There are an infinity of possible ways in which the relative factor intensities may vary between one end of the scale of relative factor prices and the other. One set of these has, however, particular analytical significance and acts as a guide-post for analysis of other cases. This set of cases is that in which there exists perfect symmetry in the production functions for both goods.

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[1] Since a second intersection is irrelevant to events within a small region around the first intersection.

Consider the situation depicted in Fig. 7, in which the curvature of one isoquant is greater than that of the other. Due to the homogeneity property, it is always possible to choose a pair of isoquants which are tangential, such as *aa* and *bb*. Then the case of perfect symmetry exists when both isoquants are symmetrical about the tangent ray OT (which, by suitable choice of the scale along one of the axes can always be made to lie at an angle of 45° to each axis),[1] so the part of the diagram to the North-West of OT is a mirror image of the part lying to the South-East, OT itself being the mirror. The symmetrical case is, in fact, the one depicted in Fig. 7.

Take any pair of points B, B' on one of the isoquants in the symmetrical case, such that $\underline{|BOT}=\underline{|B'OT}$ Then B,B' are symmetrically situated with respect to OT. It follows that the ratio of factor 1 (which can be called labour) to factor 2 (capital) represented by point B is the inverse of the factor ratio represented by the point B'. Also, for reasons of symmetry, the tangent at B makes the same angle with the axis 1 as the tangent at B' does with the axis 2, so that the ratios of the marginal productivities of the two factors at B and B' are inverse to each other. Finally, again from considerations of symmetry, $OB=OB'$, and the quantity of labour used at B is equal to the quantity of capital used at B', and the quantity of capital used at B is equal to the quantity of labour used at B', in terms of the actual scale of the diagram.

PROPERTIES OF INVERSE RAYS THROUGH THE ORIGIN

In the symmetrical case, rays such as OB, OB' above, where the angle between one ray and one axis is equal to the angle between the other ray and the other axis (so that the line of symmetry bisects the angle between the rays), may be referred to as inverse rays and have the following properties:

(i) The ratio of labour to capital along one ray is the inverse of that along the other ray.

(ii) The ratio of the marginal productivity of labour to the marginal productivity of capital along one ray is the inverse of that along the other.

(iii) Equal distances along the two rays represent equal levels of output of the commodity.

(iv) The marginal productivity of labour along one ray is equal to the marginal productivity of capital along the other.

(i), (ii) and (iii) follow directly from the symmetry considerations and have already been educed. To demonstrate (iv), consider two points at which inverse rays cut the same isoquant, such as B, B' in Fig. 7. Denoting values at one of the points by primes, values at the other by unprimed symbols, it follows from Euler's theorem that, since both points lie on the same isoquant,

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[1] This choice of scale will be supposed to have been carried out in all the following discussion.

$$L_A.MPL_A+C_A.MPC_A=L'_A.MPL'_A+C'_A.MPC'_A$$

$$L_A.MPL_A\left(1+\frac{C_A}{L_A}\frac{MPC_A}{MPL_A}\right)=C'_A.MPC'_A\left(\frac{L'_A}{C'_A}\frac{MPL'_A}{MPC'_A}+1\right)$$

From (i) and (ii) above, the expressions in brackets must be equal. Also, from the symmetry properties, $L_A=C'_A$, so that

$$MPL_A=MPC'_A$$

Since this holds for two points along the inverse rays, it must hold for all points along the rays since, from section I, MPL_A, MPC'_A are constant along the respective rays.

THE EDGEWORTH BOX DIAGRAM FOR THE SYMMETRICAL CASE

Consider any Edgeworth box, such as *ACBD* in Fig. 8, and consider possible points on the contract line of such a box. Such points will be defined by points of intersection (such as X_1, X_2) of rays through the *A* and *B* origins which are such as to cut the *A* and *B* isoquants, respectively, at points where the tangents are parallel. Let ϕ, θ be the angles whose tangents represent the ratio of labour to capital in the production of *A* and *B*. Then, in Fig. 8, $\phi_1=\underline{/DAX_1}$, $\theta_1=\underline{/CBX_1}$, and $\phi_2=\underline{/DAX_2}$, $\theta_2=\underline{/CBX_2}$.

When the isoquants are drawn from the same origin, as in Fig. 7, the angles ϕ and θ are given by $\underline{/COA}$ and $\underline{/COB}$, or by $\underline{/COA'}$ and $\underline{/COB'}$. Now, if $\propto$ is the angle whose tangent represents the endowed ratio of labour to capital in the economy ($\propto=\underline{/DAB}$ in Fig. 8), then, of all pairs of points, one from each isoquant, at which the tangents are parallel,

(*a*) those pairs for which $\phi<\propto<\theta$ will define a point on the contract line, and this contract line will lie to the South-East of the diagonal in the box diagram,

(*b*) those pairs for which $\phi>\propto>\theta$ will define a point on the contract line, and this contract line will lie to the North-West of the diagonal,

(*c*) that pair of coincident points for which $\phi=\theta=\propto$ will define an infinity of points lying along the diagonal which will also be the contract line,

(*d*) those pairs of points for which ϕ, $\theta>\propto$ or ϕ, $\theta<\propto$ will not define points on the contract line of any box whose factor endowment ratio is represented by $\propto$.

All these considerations follow directly from an observation of the geometry of Fig. 8 in conjunction with that of Fig. 7. Imagine an economy whose endowed ratio of labour to capital increases from zero to infinity, so that the ray which represents the endowed ratio in Fig. 7 sweeps around from coincidence with the axis 2 to coincidence with the axis 1, this ray being represented by *OQ*.

When *OQ* lies below *OA′* on the diagram, neither *A′*, *B′* nor any pair of points to the North-West of *A′*, *B′* will define points on the contract line, and only those portions of the isoquants in the South-East corner will be relevant to the economy.

As *OQ* moves around, *A′* and *B′* will come to define a point on the contract line so long as *OQ* lies between *OA′* and *OB′*, then will be off the contract line when *OQ* lies between *OB′* and *OT*. When *OQ* coincides with *OT*, the contract line degenerates into the diagonal, and then shifts to lie to the North-West of the diagonal when *OQ* moves past *OT*, instead of South-East as when *OQ* was below *OT*. *A* and *B* will come on to the contract line when *OQ* lies above *OB* and will go off it again when *OQ* moves to above *OA*.

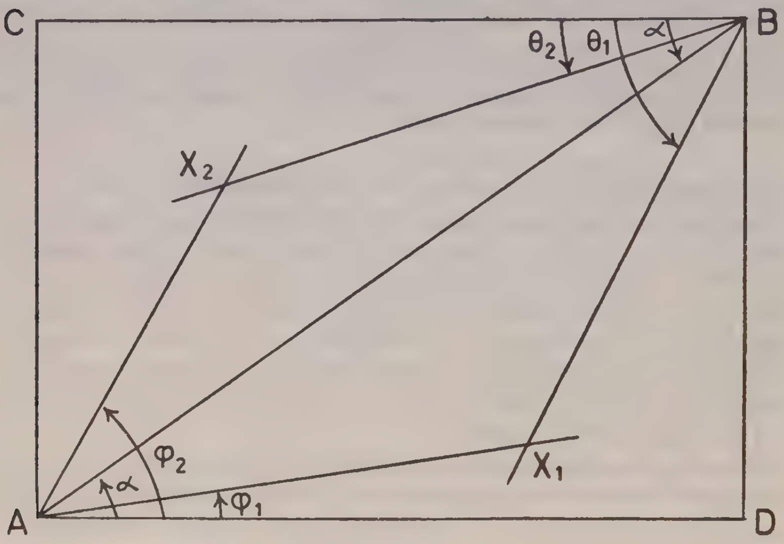

Figure 8

The factor endowment ratio corresponding to *OT* may be termed the critical ratio, since it is the ratio at which the relative factor intensities of the two commodities change places. If two countries be considered, with different factor endowment ratios, neither of which is the critical ratio, then there are two possible situations:

(1) The countries have factor endowment ratios which are both less than, or both greater than, the critical ratio. In the first case *A* is the capital intensive good in both countries, in the second case *B* is the capital intensive good in both countries, in terms of Fig. 7. In either case the analysis of all the preceding sections holds in full, the parts of the isoquants corresponding to endowment ratios on the opposite side of the critical ratio from the actual endowments of the countries being irrelevant.

(2) The countries have factor endowment ratios which lie on opposite sides of the critical ratio. Then the good which is labour-intensive in

one country is capital-intensive in the other, the contract lines lie on opposite sides of the diagonal, and the countries have no corresponding points. The analysis of the preceding sections does not hold at all, and a new type of analysis is necessary. This analysis can be made in terms of a class of points, analogous in many ways to the corresponding points of the preceding sections, which may be termed inverse points.

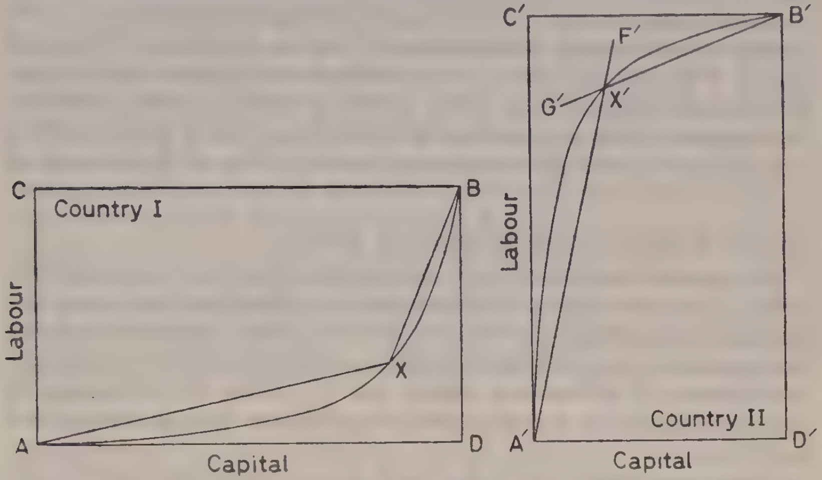

Figure 9

THE THEOREM OF INVERSE POINTS

Consider two countries with perfectly symmetrical production functions of the type already discussed, whose factor endowment ratios lie on either side of the critical ratio. Suppose that the two countries are represented by the box diagrams $ACBD$ and $A'C'B'D'$ in Fig. 9. Let X be a point in the contract line of country I. Draw, in the box representing country II, a ray $A'F'$ through A' which is inverse to the ray AX in I, that is, such that $\angle C'A'F' = \angle DAX$. Similarly, draw a ray $B'G'$ through B' which is inverse to the ray BX in country I (i.e. $\angle C'B'G' = \angle DBX$). Then the point X', which lies at the intersection of the rays $A'F'$ and $B'G'$ is the *inverse point* to the point X in country I, with the following properties:

(i) If X is on the contract line of country I, then X' is on the contract line of country II.

(ii) The marginal productivity of labour in the production of both commodities at the point X' in country II is equal to the marginal productivity of capital in the production of both commodities at the point X in country I, and a similar inverse relationship holds between the marginal productivity of capital at X and the marginal productivity of labour at X'.

(iii) The commodity price ratio at X' is the same as at X.

Of these properties (ii) follows directly from the properties of inverse rays discussed earlier; (i) follows from the fact that, if X is on the contract line of country I, then $MPL_A/MPC_A = MPL_B/MPC_B$. Since each of these two ratios at X' is the inverse of its value at X, the equality must still hold, so that X' is on country II's contract line.

Now the commodity price ratio at X is given by MPL_A/MPL_B, and that at X' by MPL'_A/MPL'_B, the primes denoting values at X'. Since X' is on the contract line, $MPL'_A/MPL'_B = MPC'_A/MPC'_B$, and the latter ratio is, from (ii), equal to MPL_A/MPL_B. Hence $MPL'_A/MPL'_B = MPL_A/MPL_B$ and the commodity price ratio at X' is the same as at X.

INVERSE POINTS AND THE PATTERN OF TRADE

The patterns of trade which will result when two countries have factor endowment ratios which are such that they have inverse points and not corresponding points can be seen most clearly through the interposition of an intermediate step. Consider an economy whose endowments of labour and capital are in inverse ratio to those in country I: such an economy may be called the inverse economy to country I.

If the rectangle $A'C'B'D'$ in Fig. 9 were in this relationship to the rectangle $ACBD$, so that country II were the inverse of country I, then the diagonals of the two rectangles would be in inverse relationship so that $\underline{/DAB} = \underline{/C'A'B'}$. It follows directly from the symmetry of the system that every point on the contract line of country II would be the inverse of a point on the contract line of country I, and that every point on the contract line of country I would be the inverse of a point on the contract line of country II. Furthermore, for all pairs of inverse points X, X', the proportionality relationship $AX/BX = A'X'/B'X'$ would be true. The contract lines of the two economies would, therefore, present the same ranges of commodity price ratios, and, at every price ratio, the same in both countries, the proportions in which the two commodities were produced would be identical. In fact, if the rectangle $A'C'B'D'$ were relabelled by the interchange of C' and D', the new diagram $A'C'B'D'$ would be geometrically similar in all respects to the diagram $ACBD$.

When the factor endowment ratios are thus inverse to each other, the exceptional case occurs that, with the same tastes and widely differing factor endowment ratios, there will be no incentive to trade, since the production patterns will be identical in the two countries at all prices.

This apparently paradoxical situation can occur (and not only in the symmetrical case) because, in the particular circumstances of the case, each country is as well suited by its own factor endowment as the other. Indeed, such is the structural similarity between the two economies in this case that a description of one country, in economic terms alone, would exactly fit the other. Two travellers from the two countries, comparing notes in a third, would only discover that their countries differed when they described the factors in physical terms: it would then be discovered that the factor physically described as labour in country I was exactly equivalent in all *economic* aspects to the factor physically described as capital in country II. So long as factors were immobile between countries, labour in country I and capital in country II might just as well be regarded as the same factor, since the only relationship between them is through their economic aspects.

The method of analysis of the trade relationships between two countries with factor endowment ratios which lead to inverse points is now straightforward. The trade relationships between country I and country II are exactly the same as the trade relationships between country II and the *inverse* of country I. Since country II and the inverse of country I have the same relative factor intensities in the production of the two goods, they can be analysed by the methods of the earlier sections, using corresponding points to determine which country will export which good. In fact, inverse points in country II relative to country I are corresponding points to points in the inverse of country I.

The general rule for determining the pattern of trade under these circumstances can be expressed in the following way. Country II will export that good which is intensive in the factor relatively abundant in comparison with the *inverse* of country I.

Suppose, for example, that *A* is the labour-intensive good in country II, that the labour/capital ratio in country I is 0.5, and that the labour/capital ratio in country II is 1.5. Then the factor ratio in the inverse of country I will be 2.0, and country II will be relatively abundant in *capital* by comparison. Country II will export *B*, the capital-intensive good, in exchange for *A*, which is the capital-intensive good to country I, but the labour-intensive good to country II. Here is another paradoxical situation: country II, with only one-third as much capital per unit of labour as country I, will export her capital-intensive good.[1]

If, however, all other things were the same, but the ratio of labour to capital in country II were 2.5, then country II would have abundant labour relative to the inverse of country I, and would export *A*. Country I would export *B*, her labour-intensive good.

Both countries, then, will export labour-intensive goods (in terms of their respective modes of production), or both will export capital-intensive goods. It is clear that factor prices will never be equalised, nor can one say with certainty[2] whether they will move closer or further apart as the result of trade. Trade will cause the price of labour relative to capital to rise in both countries together, or to fall in both countries together. The ratio of the commodity price of labour in country I to that in country II may rise, fall, or remain constant as a result of trade.

The London School of Economics.

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[1] This is clearly relevant to the Leontiev paradox for the United States.

[2] That is, unless the *exact* contours of the production functions are known.

The Theory of Customs Unions: Trade Diversion and Welfare[1]

By Richard G. Lipsey

In his book *The Customs Union Issue* Professor Viner draws the distinction between the trade-creating and the trade-diverting effects of a customs union. In any theory of customs unions this must be a fundamental distinction. However, after defining the two terms, Professor Viner goes on to conclude that, in some sense, trade creation may be said to be a ' good thing ' and trade diversion a ' bad thing '.[2]

When a customs union is formed, relative prices in the domestic markets of the member countries are changed because the tariffs on some imports are removed. These price changes are likely to have two important initial effects. First, they may influence the world location of production in the several ways carefully analysed by Viner. Secondly, they will have a parallel effect on the location of world consumption. Usually one would expect to find the union members increasing their consumption of each other's products while reducing imports from the rest of the world.[3] Changes of the first type will be classified under the general heading, *production effects of union*, and changes of the second type as *consumption effects of union*. It must be emphasised that even if world production is fixed, a customs union will cause some changes in patterns of consumption due to changes in relative prices in the domestic markets of the member countries. The consumption effect, therefore, may operate even if there is no production effect.

The proposition that a change brought about by a customs union is, in general, good or bad necessarily implies a welfare judgement. But the effect of a customs union on welfare must be a combination of

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[1] I am greatly indebted to Mr. K. Klappholz, Doctor H. Makower and Professor J. E. Meade for their many valuable comments and suggestions.

[2] The relevant passage from Viner is as follows :

> There will be commodities, however, which one of the members of the customs union will now newly import from the other but which it formerly did not import at all because the price of the protected domestic product was lower than the price at any foreign source plus the duty. This shift in the locus of production as between the two countries is a shift from a high-cost to a lower-cost point, *a shift which the free trader can properly approve. . .*
>
> There will be other commodities which one of the members of the customs union will now newly import from the other whereas before the customs union it imported them from a third country, because that was the cheapest possible source of supply even after payment of the duty. The shift in the locus of production is now not as between the two member countries but as between a low-cost third country and the other, high-cost, member country. This is a shift which the protectionist approves, but *it is not one which the free trader who understands the logic of his own doctrine can properly approve.* (Viner, Jacob, *The Customs Union Issue*, Carnegie Endowment for International Peace, New York, 1950, p. 43.) Italics not in the original.

[3] But this is not necessarily so. See note 1, page 42 below.

its effects on the location, and hence the cost of world production and on the location, and hence the ‘ utility ’, of world consumption. In this paper it will be shown that when consumption effects are allowed for, the simple conclusions that trade creation is ‘ good ’ and trade diversion is ‘ bad ’ are no longer valid. Although the distinction between trade creation and trade diversion is fundamental for classifying the changes in production consequent on the formation of a customs union, it is not one on which welfare conclusions can be based.

I

The problem of the welfare effects of trade diversion will be isolated by using an extremely simple model. The model will be used to show that an increase in welfare may follow from the formation of a customs union which results solely in the diversion of trade from lower—to higher—cost sources of supply. Furthermore, it will be shown that this welfare gain may be enjoyed by the country whose import trade is diverted, by the customs union area considered as a unit and by the world as a whole.

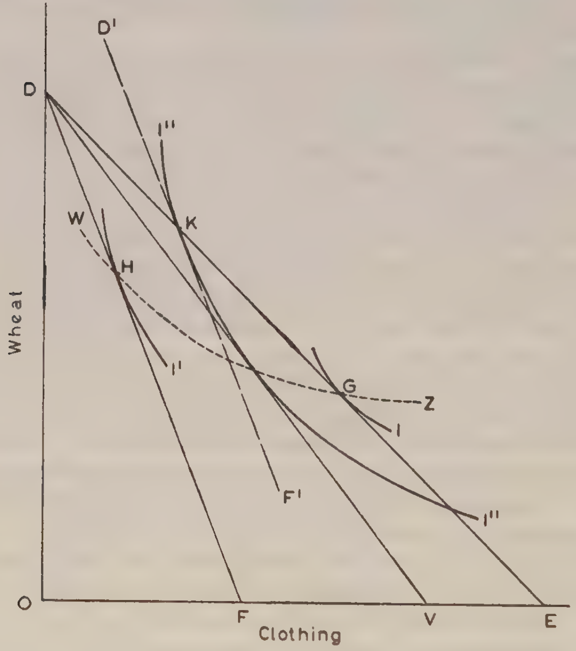
The analysis will be based on the following simple model : The world is divided into three countries, A, B, and C. The effects of various trade policies on the welfare of country A only is first considered. A is a small country whose inhabitants consume two commodities, wheat and clothing. A specialises in the production of wheat and obtains her clothing by means of international trade. Being small, she cannot influence the price of clothing in terms of wheat. Country C offers clothing at a lower wheat price than does B, so that, in the absence of country-discriminating tariffs, A will trade with C, exporting wheat in return for clothing. It is assumed that A levies a tariff on imports but that the rate is not high enough to protect a domestic clothing industry, so that she purchases her clothing from C. Now let country A form a customs union with country B, as a result of which B replaces C as the supplier of clothing to A. B is a higher cost producer of clothing than is C but her price without the tariff is less than C’s price with the tariff. Hence, the union causes trade diversion, A’s trade being diverted from C to B.

Indifference curves are used in the analysis but the conclusions reached do not depend on the assumption of a unique community welfare function. For this reason it is first assumed that in country A there is only one consumer, whose indifference map is, *ipso facto*, country A’s community indifference map. Later the analysis is extended to a community of more than one individual.

Diagram I illustrates the conditions existing in country A. OD measures A’s production of wheat. The price ratio between wheat and clothing when trade is with C is shown by the slope of the price line DE. The free-trade equilibrium position is at point G. It is assumed that A levies a tariff on clothing imports of $\frac{EF}{OF}$ per cent. If the tariff revenue were destroyed, the new equilibrium would be at H where an indifference curve is tangent to the domestic price line, DF. However, if the usual assumption is made that the tariff revenue is returned to the consumer, then the point of final equilibrium must be located on DE. It will be where an indifference curve has a slope equal to that of DF at the point where it cuts DE. In Diagram I the equilibrium is at point K, where the curve through that point is tangent to D′F′ which is drawn parallel to DF.[1] At this point it is impossible for the consumer to trade along his domestic price line D′F′ and reach a higher indifference curve.[2] The tariff has the expected result of lowering imports of clothing and raising consumption of domestic wheat.

It is assumed that A now forms a trade-diverting customs union with country B. The line indicating the terms of trade with B must lie

DIAGRAM I



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[1] If neither wheat nor clothing is an inferior good, the point K must lie between G and H in relation to the clothing axis.

[2] It will be noted that, if projected to the axes, D′F′ would have a Y intercept above the point D. This illustrates the fact that whatever bundle of wheat and clothing the consumer may be consuming at K, it will appear to him that he could trade all his clothing for more wheat than there is in existence. This illusion results from the fact that the tariff makes the price of wheat appear to the consumer lower than the price at which the two commodities can in fact be traded in the international market.

between DE and DF.[1] Since there is no tariff levied on A-B trade, the equilibrium position must be located on the price-consumption line WHGZ. The effects of the union on country A's welfare may now be considered. In Diagram I, starting from the point D, draw a line tangential to the indifference curve I″ (the curve through K) and extend it to cut the clothing axis at some point V. The slope of this line DV indicates terms of trade with country B which leave A as well off as when trade was with country C. If A obtains any terms of trade with B worse than DE but better than DV, the trade-diverting customs union must result in an increase in A's welfare. If she obtains any terms of trade better than DF but worse than DV, trade diversion will occur but it will result in a loss of welfare for A.[2] It can be concluded, therefore, that country A might gain by entering a customs union whose sole production effect was to divert her import trade from lower—to higher—cost sources of supply.

The above conclusion may not have an immediate common-sense appeal,[3] yet the explanation is easily seen with the help of a diagram. The possibility stems from the fact that whenever imports are subject to a tariff, the position of equilibrium must be one where an indifference curve cuts (*not* is tangent to) the international price line. From this it follows that there will exist an area where indifference curves higher than the one achieved at equilibrium lie below the international price line. In Diagram I this is the area above I″ but below DE. As long as the final equilibrium position lies within this area, trade carried on in the absence of tariffs, at terms of trade worse than those indicated by DE, will increase welfare. In a verbal statement this possibility may be explained by referring to the two opposing effects of the trade-diverting customs union. First, A shifts her purchases from a lower—to a higher—cost source of supply. It now becomes necessary to export a larger quantity of goods in order to obtain any given quantity of imports. Second, the divergence between domestic and international prices is eliminated when the union is formed. The removal of the tariff has the effect of allowing the consumer in A to adjust his purchases to a domestic price ratio which now is equal to the rate at which wheat can be transformed into clothing by means of international trade. The final welfare effect of the trade-diverting customs union must be the net effect of these two opposing tendencies ; the first working to lower welfare and the second to raise it.

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[1] By assumption, B's price of clothing in terms of wheat is higher than C's price. Therefore, the line must lie to the left of DE. However, if trade diversion is to occur, B's clothing price must be less than C's price plus the tariff. Therefore, the line must lie to the right of DF.

[2] The Diagram also illustrates the effect of the customs union on the volume of A's trade. Since K lies between G and H in relation to the clothing axis (see note 1, page 42 above) and since the post-union equilibrium point must be located on the price-consumption line, WHGZ, between the points G and H, it follows that A's imports of clothing may either rise or fall as a result of the trade-diverting customs union.

[3] The conclusion represents but another application of the general theory of second best to problems of international trade. See: Lipsey, R. G., and Lancaster, Kelvin, " The General Theory of Second Best ", *The Review of Economic Studies*, Vol. XXIV, No. 1, 1956-57. The trade-diversion problem is, in fact, a very simple application of the theory of multiple-layer second-best optima (*op. cit.*, Section X). Given the existence of price distortion by tariffs, the maximization of production is no longer necessarily desirable. An ' inefficient ' production solution may provide an efficient welfare solution. (e.g. In Diagram I, welfare is increased by moving from point K to some point *below* DE.)

If, to take a limiting case as an example, country B's price of clothing exceeds country C's price by only an infinitesimal amount, then the union would allow A to return to a position only an infinitesimal distance below the free trade position, G. In this case the only effect operating is the consumption one and the trade-diverting customs union raises welfare virtually to the free trade level.[1]

II

It must now be shown that the conclusions reached do not depend on the existence of a unique community indifference map for country A. This will be done by considering a case where country A is a community of two individuals. Diagram II is a repetition of Diagram I, all the lettering is the same except that the distribution of income in terms of wheat is shown by OD′ for consumer I and by OD″ for consumer II (OD′ + OD″=OD in Diagram I). For each individual the free-trade equilibrium position will be at the point where the international price line, DE, is tangent to one of his indifference curves. Similary, when a tariff is placed on imported clothing, each consumer will move to an equilibrium position (K′ and K″) which will satisfy the conditions for the location of the point K in Diagram I.

Once allowance is made for the existence of more than one consumer in country A, two problems arise in connection with the trade-diverting customs union between A and B. First, there will be some prices of clothing which will permit one consumer to reach an indifference curve

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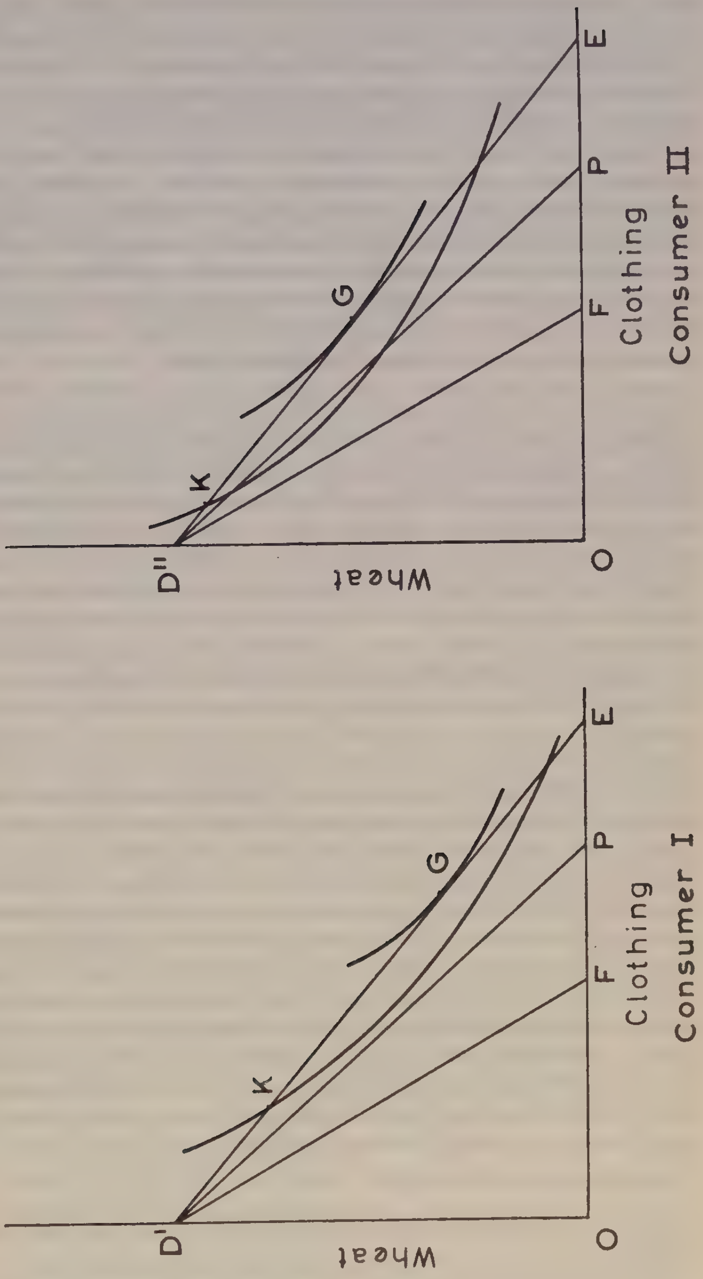
[1] A word of warning about the present model : The two-commodity model is a simplification adopted for the present analysis where it is desired to demonstrate only the possibility that trade diversion may raise the welfare of a single country and of the world. Further analysis based on so simple a model might lead to the conclusion that the consumption effect always works to raise welfare. This is not so. The important peculiarity of the present model is that country A has only one import. For any detailed analysis of the consumption effect, a three-commodity model is required. Consider, for example, a case where country A produces commodity X while importing commodity Y from country B and commodity Z from country C. Now if A forms a customs union with country B the consumption effect on welfare is complex. This is so even if there is neither trade creation nor trade diversion, so that A continues to buy Y from B and Z from C. In this case, the removal of tariffs from imports of Y changes two price ratios. On the one hand, A's domestic price ratio between X and Y is made equal to the rate at which these two commodities can be transformed into each other by means of international trade. On the other hand, the domestic price ratio between Y and Z is now made to diverge from their rate of transformation by international trade. The X–Y change works to raise welfare while the Y–Z change works to lower it. The consumption effect on welfare is now the net effect of these two opposing tendencies.

This is not the place for a detailed discussion of this example. The case is mentioned only to show that a two-commodity model obscures many of the most important problems in the theory of customs unions. An example of this type is analysed in some detail in : Lipsey & Lancaster, *op. cit.*, Section V.

DIAGRAM II


D'
Wheat
O
K
G
F
P
E
Clothing
Consumer I
D''
Wheat
O
K
G
F
P
E
Clothing
Consumer II

higher than the one he achieved at K while the other consumer is forced to a curve lower than the one he attained at K. Such a price is shown by the lines D′P and D″P in Diagram II.[1] Thus, the clear distinction between gains and losses disappears as there will be some prices for which some consumers gain while others lose. Second, the union may cause a redistribution of wheat income[2] such that one consumer always suffers a reduction in welfare. However, there will always be some prices of clothing higher than the one offered by country C which will allow all consumers to reach higher indifference curves than the ones they achieved when trade was with C. Therefore, the conclusion still stands that a country may form a trade-diverting customs union and yet gain an increase in welfare in the sense that every consumer moves to a higher indifference curve.

III

Finally, it may be objected that in considering the welfare of only one country, a parochial point of view has been adopted. The objection would run somewhat as follows: Surprising though it is that one country can increase its welfare by forming a trade-diverting customs union, the world as a whole must surely suffer a loss when this occurs.[3] The complex problem of how to measure changes in world welfare when there are many countries, each pursuing a different tariff policy, cannot be discussed in a short paper. However, for the present argument, it is sufficient to show that a case is possible where there is no doubt that world welfare is raised by the creation of a trade-diverting customs union.

Assume that B and C, the two countries that constitute the rest of the world in the previous model, are both large and that each produces wheat and clothing under conditions of constant rates of transformation. B and C levy prohibitive tariffs on trade with each other so that the only trade before the union is that between A and C. But C produces both wheat and clothing and, therefore, trade is carried on at a relative price which is equal to her domestic price ratio. After the union is formed, A trades with country B. C suffers no loss from the elimination of the trade to which she was indifferent in any case. Country B continues to produce both wheat and clothing so that she gains nothing from the new trade with A. Thus, all the gains from trade accrue to A both before and after the union. If the trade-diverting customs union raises A's welfare—and this possibility has already been demonstrated—then it raises the world's welfare.

London School of Economics.

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[1] D′P and D″P have identical slopes indicating some single price facing both consumers.

[2] i.e. the points D′ and D″ may shift after the union is formed.

[3] "Where the trade-diverting effect is predominant, one at least of the member countries is bound to be injured, both may be injured, the two combined will suffer a net injury, and there will be injury to the outside world and to the world at large." Viner, *op. cit.*, p. 44.

Colonial Trade and Payments

By Ida Greaves

It is usual to attribute to colonial territories, whether considered separately or in the aggregate, an external balance of payments similar in character to the international balance of payments of independent countries and bearing a similar interpretation. Hence the treatment of a number of colonial economic problems, notably currency movements and the money supply, terms of trade and plans for economic development, has been based on the theory of such a balance. Indeed, a number of reports by the United Nations, the International Monetary Fund, and other international agencies state explicitly that colonial territories are treated as " foreign countries " for economic purposes, although for other purposes they are treated very differently. It is the object of this article to enquire whether the accepted concepts and methods of measurement of international trade and payments are in fact applicable to the colonial position, and to consider certain interpretations of colonial trade and finance which appear to rest on international analogies.

In so far as international trade is regarded as the flow of goods and services across political frontiers, no logical difficulty arises in recording the movements of a colony's trade on the same basis as that of an independent country. The quantity and composition of its imports and exports are of as much importance and interest for a colony as for any other country, and merchandise trade by definition represents " visible " movements at points of exit and entry irrespective of the political reasons and financial arrangements which influence them. But when it is the economic aspects of colonial trade with which we are concerned, and especially if we are dealing with it in terms of payments and receipts, the assumptions of international theory are not applicable because the monetary position of a colony is entirely different from that of a country with an independently managed national currency and has quite different implications for external accounting. For one reason or another money has always been regarded as a critical factor in a nation's external trade, and with the growth of modern currencies the question of foreign exchange has become a decisive factor in trade control. Apart from political questions of what should be produced at home and what should not be sold abroad, there is at every national frontier a problem of money-changing. Payment for foreign goods cannot be made in domestic currency, and before the era of supporting gifts and donations the only external means of payment normally available were receipts from the sale of exports. Even now a nation's —or a currency bloc's—total foreign payments cannot exceed the gold and foreign exchange it has at its disposal whether in the form of earnings, loans or donations. However, with the exception of a few small places which have no commercial banks, and Bermuda which has only local banks, the colonies are not limited to paying for imports with the proceeds of exports. A colonial government does not have to consider how imports are paid for any more than do the public who buy them. Whether income in a colony is obtained from internal or external sources it represents a claim on imports indistinguishable from a claim on domestic products. Therefore, the value of imports and of exports, whether with the addition of gifts and donations or without, does not have to be equal. External receipts and payments are monetarily undifferentiated from the domestic items in a colony's social accounts, and the two categories do not have to balance separately.[1] The effects of trade, visible and invisible, across its borders may well be of great importance in these accounts, but such trade does not represent the conditions and implications with which the concept of an international balance of payments deals. This does not mean of course that the colonies use no foreign exchange. They buy their exchange requirements through London or other Commonwealth banks at the prevailing sterling rates, and in principle they are subject to the same regulations which apply to the convertibility of sterling in the United Kingdom.

The reason for this monetary position is that the colonies are in practice an overseas part of the English branch banking system, and even with particular local characteristics such as different legal tender, varying types of credit, and relatively great reliance on external bills and remittances, the colonial monetary system has nothing in common with the international aspects of separate national currencies. Practically all commercial banking in the colonies is carried on by widespread branches of large institutions with their head offices in London or some other Commonwealth centre, and the latter also have important London offices. Banking between England and the colonies is therefore of the nature and pattern of branch banking in the same national area, and not on the basis of exchange relations between independent foreign banks.[2] And this position has been consolidated by the official policy of maintaining internal currencies in the colonies which have a fixed sterling purchasing power, a policy which has been subject to only a few minor divergences in the past century. The other factor contributing to the stable domestic relations which the colonial branches are able to maintain with their head offices is the absence of central banking in any colony. There is no colonial government authority for managing money or creating credit. The Bank of England may be said to be the colonies' central bank in so far as they use central banking services, but this does not mean that the Bank of England serves the same purpose for every colonial government that it serves for the United Kingdom. Most notably, it does not provide colonial governments with the means of making money by deficit finance, which is now as much the mark of a national currency as the *imprimatur* of a sovereign on a coin once was.

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[1] The Report of an International Bank Mission on *The Economic Development of Jamaica*, says, p. 278, its currency system " means that Jamaica cannot have a ' balance of payments ' problem as that term is now commonly understood ", but adds that " Jamaica's only problem is that of supplying the rest of the world with sufficient goods and services to enable it to purchase from the rest of the world those things which it desires . . . " It is difficult to see how having " only " this problem would relieve a colony of a balance of payments problem.

[2] The meaning of " branch " or " agency " as used in the *Balance of Payments Manual* of the International Monetary Fund does not seem to me to provide for this colonial banking position. It would of course be correct for the *Manual* to omit this if it did *not* classify colonies as foreign countries and include them in similar balance of payments statistics.

Furthermore, the colonial monetary system does not hold the gold and foreign exchange reserves which are required by a national system for meeting its external liabilities. Banks in some colonies keep working balances in those foreign currencies their business normally requires, but these do not perform the functions of exchange reserves for the colonies concerned. The sterling balances held by the banks in London are comparable to the domestic monetary reserves of a national banking system, that is, they are used to make internal payments arising from the banks' liabilities to their customers. In the normal course of business a colonial bank treats demands for drafts on London in the same way as demands for cash at its own counter. Although the first type of payment is external to the colony geographically, both types are internal to the banking system. That is to say, the banks finance a colony's imports on the basis of the same reserves with which they finance internal business and credit, and the colonial currency system reflects this single source of liquidity on internal and import account.[1] Neither the value nor the amount of colonial currency is determined in the money market, and the counterpart sterling funds held by the currency authorities for retiring redundant currency do not function as reserves for the banks. These funds are specifically and entirely a currency redemption reserve, which means that they are not available when the banks face increasing demands for cash payments, but only when they find their currency on hand becoming redundant because of a decline in these demands. In short, the controlling factor in the colonial money supply, cash and credit, is not foreign exchange but commercial bank resources, and each bank has considerable scope for discretion and flexibility in the amount of its resources it employs in a particular colony.[2] It might be added that the domestic position of the colonies in the English monetary system is not confined to their business with colonial branches.

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[1] The statement of H.A. Shannon in " The Modern Colonial Sterling Exchange Standard ", I. M. F., *Papers*, April, 1952, " the position of the banking system within the currency system is fairly simple in principle ", seems to me to reverse the historical and monetary roles of the two systems even in principle.

[2] With the exception of the Bank of British West Africa, the colonial banks do most of their business in other than colonial territories, and their published balance sheets do not show the operations of different branches.

Transactions between other English banks and colonial customers are also conducted on the basis of internal banking and not of foreign exchange. Some colonial residents keep accounts in English banks, and while external firms use banks in the colony for handling their working balances and making remittances, they usually finance their own imports and remit funds to cover their local cash requirements.[1] This means that a large part of colonial external trade is carried on with funds outside the published colonial monetary statistics, which represent only the part of the money supply which is colonial in its geographical origins.

Even within the defined colonial framework, however, the banking statistics are something less than complete and informative, and they cannot be treated as the monetary counterpart of a colony's trade. There is no figure of total debits in an accounting period, and in the special circumstances of colonial trade it would be useful to see the turnover of London balances and local cash separately. No less regrettable is the failure of the classification of loans and advances to show the special credit characteristics of different colonies and economic conditions, e.g. real estate, internal as distinct from external trade, personal overdrafts, indebtedness of public authorities and other financial institutions. In colonies where currency circulation is large relative to bank cash, and for a number of reasons, religious, commercial, geographical, or the mere desire for financial privacy, neither frequent nor extensive use is made of the banks, the velocity of circulation of the currency is in itself an important factor in the public's purchasing power, and is largely outside the figures of periodical changes in bank cash, which are all that are now published. Historically, export industries, including military bases and later tourists, have provided an important part of the money income in all colonies, and were indeed the original cause of the presence of the branch banks, but their business is not confined to such industries. The volume of bank credit and the rates of interest in a colony at a particular time depend on two things, local business conditions and the bank rate and credit policy prevailing in London. This means that when the United Kingdom is pursuing a policy of monetary controls the effects are soon transmitted to the colonies, whereas physical controls such as rationing, quotas and purchase taxes only affect a colony if they are introduced by its own government. Among its other historical marks this is a monetary system which from the standpoint of the United Kingdom was well suited to a time when the increase of exports to colonial markets was a prime objective of economic policy, and industrial employment at home was a more important problem than foreign exchange.

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[1] The Report of an International Bank Mission on *The Economic Development of British Guiana* says, p. 98, " It is notable that whereas only 27 per cent. of commercial bank assets, which consist for the most part of local deposits, are invested locally, similar banks in Jamaica, operating under rather closely parallel conditions, have 2/3rds of their assets invested in that colony ". It is unfortunate that the Mission did not explain what it meant by these parallel conditions. In British Guiana a very large proportion of the import and export trade is carried on by a few external corporations which make little use of local bank credit, but keep deposits, some of which are obtained from the sale of imports and domestic products, for paying the expenses of their mines, plantations and other businesses. In Jamaica, with the exception of the bauxite industry established in 1950 and a few sugar companies, the bulk of trade and production is carried on by domestic concerns which rely on local banks.

From the standpoint of a colonial public their own money is the same as sterling and is convertible into foreign currencies on the same terms. Some colonies may think it unreasonable that there are restrictions on convertibility, but they are never aware of an exchange problem nearer home than that between sterling and other currencies. They do not get into the position which is described in other countries as a shortage of foreign exchange. If a colony is unable to purchase all the external goods it would like to have, this is because of a shortage of purchasing power in general. Whatever the public has can be spent on external or domestic goods without reference to foreign exchange reserves. And this is the reason why the colonies have gone through alternating periods of high and low prices, and fluctuations in income caused by the ebb and flow of military activity and external investment, without experiencing the balance of payments crises which have become a regular feature of the course of economic development in countries with independent currencies. Its monetary system makes inflationary conditions in a colony—which can arise without a budget deficit and a central bank—favourable to imports because the increasing demand neither raises their prices nor causes a fall in the external purchasing power of the currency. At the same time, higher domestic incomes and prices are easily financed by the banking system. There is no evidence that the banks follow a policy of controlling credit in order to control the demand for imports, that is pressure on their London balances. They have from time to time checked credit expansion in some colonies when real estate prices, personal overdrafts and other speculative trends were outrunning their criteria of safety, and they normally watch for signs of whether imports are piling up faster than sales. But this is all a matter of preventing internal excesses and bad debts, not of protecting exchange reserves.

Colonial capital movements, like current trade payments, are part of a domestic and not an international monetary system. Investment in London, public and private, is evidence of a preference for importing capital instead of buying other things, domestic or imported, or making internal investments. Decisions in the matter are implemented through the normal monetary channels and do not depend on the balance of trade or the supply of foreign exchange.[1] The London funds and investments held by colonial governments, other public authorities and the banks have attracted a good deal of attention and criticism since they have been published in the official figures of the United Kingdom's sterling balances. Most of these funds represent types and methods of colonial finance established long before the post-war era of sterling crises and now increased in volume by the rise in colonial incomes and taxes. They are the result of definite colonial policies of public finance and investment, and as such they form a permanent part of the colonies' external expenditure. To treat them as the consequence of administrative restrictions on imports, or the dependent variables of an assumed balance of payments, is irrelevant and meaningless.[1] The private transactions of firms and individuals which lead to their having balances and investments in London are not shown in the United Kingdom monetary statistics, and no records of them appear in the colonial reports. However, the balance of colonial transactions with the "dollar area" published in the White Papers on the Balance of Payments is the result of predominantly private trade and finance because colonial governments have few dealings in dollars. The dollar receipts of the commodity marketing boards which are converted into sterling must form part of the balances, and possibly some of the taxes held in government balances are paid by other exporters earning dollars, but otherwise the two sets of figures for dollar transactions and for sterling balances are separate and independent. To think that because some colonies do not spend their dollar earnings upon imports from the dollar area they do not spend them at all, and hence these earnings become forced savings held in the sterling balances, shows misconceptions about both dollar earnings and sterling balances.[2] As far as a colony is concerned, selling its exports for foreign currencies is no different from selling them for sterling. How and in what amounts the export receipts are distributed in the colony is a question of fact independent of the published value of exports and the convertibility of sterling.

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[1] The Report of an International Bank Mission on *The Economic Development of Nigeria*, p. 145, comments on Nigeria's official sterling balances that in March, 1953, not one of the 20 Latin American republics had such reserves. But the comparison is scarcely revealing as Nigeria's sterling does not represent exchange reserves, and if it is to be compared to the finances of other countries it should be

No estimate or interpretation of colonial external finance can be complete and balanced without taking account of the private balances and investments held in London by firms and individuals carrying on business in the colonies. These funds are an integral and normal part of colonial trade and production just as the official balances are of public administration and finance, and a considerable part of the value of exports, including dollar earnings, represents receipts that are not

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according to the purposes it serves. The Mission's statement omits the point that with their low foreign reserves many Latin American countries operate multiple exchange rates which restrict imports in a way unknown in the colonies.

[1] Cf. Arthur Hazlewood, "Colonial External Finance since the War," *Review of Economic Studies*, 1953–54, No. 54, p. 38, "It is necessary to show the magnitude of some of the forces which have held external expenditure below external receipts, and so allowed sterling balances to accumulate". This view overlooks the fact that these balances are colonial external expenditures and not blocked sterling or adventitious reserves.

[2] For an argument to this effect based on the somewhat similar trend of these two series of statistics see Kenneth Wright, "Dollar Pooling in the Sterling Area," *American Economic Review*, September 1954 (pp. 559–76), and September 1955, pp. 658–61.

distributed in the exporting colony. Exactly how much of the published value of exports does constitute income in a particular colony depends upon the ownership and organisation of production, and differs widely between colonies, but as an example I shall take an extreme and, I hope, striking case. An important contribution to the increase in the colonial sterling balances after 1949 came from the African Commodity Marketing Boards because of the rise in the prices of these commodities. The sterling funds of the Boards are due entirely to special arrangements for buying and marketing the crops of native producers. The prices of those colonial commodities which are produced by external corporations, e.g., copper, tin, lead, zinc, rubber, petroleum, etc., also rose in varying degrees in the same period, and in consequence the earnings of the corporations and their balance sheet totals were higher. Reserves and surpluses as well as dividends were increased, and marketing costs and taxes were greater. All these items represent payments and balances outside the exporting colonies, and chiefly in sterling, although some costs as well as sales were in foreign currencies. One important difference between the two types of production is that most corporations have made extensive additions to capital formation in their industries, while the Marketing Boards funds were not depleted for this purpose. " Native " production has certainly not contributed more to the Dollar Pool, or saved the Sterling Area more dollar purchases, than corporate production, but of the latter no records have been published, while for merely administrative reasons the former has become statistics.

The fact is we do not have comprehensive information about the ownership and finance of colonial production and the distribution of incomes arising from it, and without such information the external income and expenditure of the colonies must remain conjectural on some counts and obscure on others.[1] In official documents dealing with their trade and payments the statement is sometimes found, apparently on the model of the *Balance of Payments Manual*, that imports and exports are valued at the time the change of ownership takes place. But if it is payment by the importer to the exporter which denotes change of ownership, many of the goods entering and leaving some colonies would never appear in their trade accounts because the movements are internal activities of various business concerns and do not involve purchase payments. An external corporation, whether it is engaged in export or import trade, or both, pays all costs incidental to its operations out of its home funds, and these costs are both external and internal to the colony. Price and sales policies differ widely between commodities and corporations, and where colonial production is only one stage of an integrated process controlled by the same concern, as in the case of the bauxite companies and some of the oil, rubber, sugar and other companies, no sale is involved in the export, and the price is a matter for the company's home accounts. There are of course also external corporations which sell their colonial production in the raw or processed state in which it leaves the colony, but this does not necessarily mean that ownership is transferred on shipment, and if it is, the seller is the corporation's home office and not the colony. In short, for a considerable volume of colonial exports the place of origin and the place of ownership are not the same; export does not always denote change of ownership, and even when it does the sales receipts do not accrue to the colony. It is only when exports are produced and sold by domestic concerns in a colony that we can be reasonably certain that the record of shipment represents a change of ownership. But although colonial economic affairs have been receiving increased attention in recent years, precise information about them is far from keeping pace with this increase, and the trade statistics still represent little more than was required for levying duties under the Navigation Acts, which is an inadequate and ambiguous basis for dealing with the problems and issues of today.

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[1] This is in practice no different from the position of internal income and expenditure, but the existence of external trade figures, and more recently the limited category of payments defined as sterling reserves, gives rise to inferences about incomes obtained and expenditure made abroad, while there are no statistics of internal trade and production to stimulate speculation on this subject.

In recent discussions of colonial trade and finance the currency system has perhaps received more attention than any other one factor, and on the analogy of an international balance of payments a colony's currency has often been described as representing an external cost, and therefore a " surrender " of exports and a " sacrifice " of imports commensurate with every increase in the circulation. I have never seen an explanation of how decreases in the circulation add to income or imports. Colonial currency has frequently been treated as a 100 per cent. sterling exchange standard because until 1955 the currency authorities held sterling counterpart funds equal to at least the nominal value of the currency issued. From the beginning of that year, however, colonial governments were informed by the Secretary of State that they could withdraw a small proportion of the sterling and replace it with their own securities. This procedure would reduce the sterling ratio of the currency reserves to perhaps 70 per cent. to 80 per cent. of the issue, and it could presumably mean that some colonial governments would obtain additional currency for their own use direct from the issuing authority by depositing securities, but no change has been announced in the method whereby the banks which normally provide all the currency required by the public obtain their supplies by transferring an equal amount of sterling to the currency authorities. The principle of the sterling exchange standard, therefore, is not affected by the reduction in its ratio to something less than 100 per cent.,[1] and it is with the validity of applying this standard to a colony's currency, irrespective of the particular percentage, that I am going to deal. What the standard means in practice for a particular colony is explained in some detail by the Report of the International Bank Mission on *The Economic Development of Jamaica.* " The existence in Jamaica of a rigid sterling exchange standard in the form of 100 per cent. cover for the note issue means that the effect on its internal economy of changes in its international accounts must operate according to certain rules . . . This means that the money supply is determined by the net effect of payments into and out of the country except insofar as there may be changes in commercial bank credit."[1] " The real problem," according to the Mission, should be posed, " Is there any guarantee that the supply of money, as determined by the total balance of payments, will always adjust itself to what is most desirable for the economy as a whole (assuming such an optimum can be agreed upon) ? " It is surprising that the Mission should be in doubt about such an optimum when it was recommending the expenditure of 34 million pounds to raise Jamaica's net annual output from 85 million to 150 million pounds annually, but in any event the " real problem " will not arise as long as Jamaica continues to have its present monetary system. History as well as analysis suggests that the problem which Jamaica, like other colonies, needs to consider is that of adjusting the factors of production at its disposal to the standard of living it desires.

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[1] The implications of such a standard are explained by H. A. Shannon, *loc. cit. supra*, p. 322. " The changes in cash and credit in a colonial territory are primariy functions of the changes in its balance of payments. The more favourable its balance, the more sterling it can deposit in London and the greater will be its quantity of local cash; the more adverse its balance, the more it must reduce its quantity of local cash to obtain the sterling in London needed to meet the adverse balance."

I think confusion about the currency system could be avoided if the specific and limited purposes for which it was established were clearly recognised. The problem with which the prototype West African Currency Board had to deal was not a foreign exchange problem; it was a two-fold administrative problem of the domestic monetary system, namely, to prevent English coins which no institution was legally bound to redeem from becoming redundant on the Coast, and to obtain for the territories the seignorage on the currency they used. The problem arose in this region because it had had neither an indigenous currency nor the note-issuing banks which had been operating in other parts of the Empire since the middle of the 19th century. The subsequent extension of the West African currency system to other colonies was not necessary for the same reasons, but it eventually replaced bank notes with a more modern type of legal tender, which yields a profit to the issuing government. Under this system, when a bank in a colony wants more currency, which means that the public is spending more, its London office transfers a corresponding amount of sterling to the account of the currency authority concerned, and the currency is issued in the colony.[1] A colonial government creates claims to sterling by issuing currency; it does not curtail imports or impound foreign exchange.[2] The sterling it obtains at each transaction is merely transferred to the public sector of the colony's accounts from the private sector, the commercial banks, where it is replaced by an equal amount of claims to sterling, and there is no change in the banks' total cash position. The assets of the currency authority increase by the amount of the sterling payment, and in formal accounting this is an import of capital by the colony, but it is not acquired at the cost of other imports on which it would have been spent or of any alternative use of purchasing power. When a branch finds too much currency on hand, it returns the excess to the local currency officer and obtains the release of the corresponding sterling to its London office. Again, the bank's total cash is not affected by the transaction, and the currency authority's accounts are now reduced by an equal amount of sterling assets and currency liabilities. It follows that to show currency increases as a debit item in a colony's capital account without an offsetting credit[3] results in distortion of the accounts and misrepresentation of the financial position. The cause of either upward or downward movements in the circulation lies in changes in demand for currency in the colony, which depend in turn on the level of internal income, the form of economic organisation, and the monetary habits of the public, all of which differ widely between colonies. If a colonial currency circulation can usefully be regarded as a " function " of anything, it is of changes in income in the colony. Currency movements take place in response to internal demand, not external, and they are a determinant, not a dependent, of the external balance.

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[1] *Op. cit. supra*, p. 277. The position in West Africa, where bank money is a smaller part of the total monetary supply than in Jamaica, is summarised in *Money and Banking in British Colonial Africa*, by W. T. Newlyn and D. C. Rowan, p. 201. " In such a situation the whole of any increment to the money supply must be obtained from surpluses on the balance of payments. It is not difficult to see that this constitutes a considerable burden for a poor country, since the sterling reserves can only be acquired by the surrender of claims to an equivalent value of real resources."

A colony which now diverts part of its currency funds to its general budget will get a sterling windfall that has no historical cost, and the cash at its disposal will be increased. Superficially, this might be taken to mean that its capacity to buy imports was curtailed unnecessarily by the retention of the 100 per cent. reserve requirement for several years after part of this had become superfluous to its original purpose.[4] But if the underlying conditions of post-war colonial finance are considered, this assumption ceases to be obvious and even becomes untenable. The emphasis on imports is irrelevant anyway in colonial monetary conditions. When a colony borrows in London it is not for the special purpose of being able to finance imports, but to have funds available for capital purposes, which often include expenditure on local labour and construction. The question of whether colonial government expenditure would have been increased if the currency funds had been available sooner raises a point outside the scope of the currency accounts and involves the administration of the colonial monetary system as a whole. Colonial governments can only raise loans in London with the permission of the Capital Issues Committee, and it is said in some colonies that many applications have been reduced, postponed and even refused. If, therefore, a colony had provided itself with capital by drawing on its currency funds, would the amount of the new loans it was permitted to raise not have been reduced? In the circumstances it seems likely that it would have encountered much the same ceiling on its expenditure whether the funds came from two sources or from one. An earlier release of currency funds, therefore, would have proved to be merely an alternative source of available capital. Indeed, it may prove to be no more than that now.

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[1] To simplify the discussion no notice is taken of the authorities' commissions on transfers in both directions. The annual operating profit or loss of its currency authority seems a more suitable item for inclusion in a colony's accounts than the cost of manufacturing the currency which is recommended in " British Colonies and Dependencies ", Chapter 16 of *International Trade Statistics*, ed. by R. G. D. Allen and J. E. Ely.

[2] How curious the views on this point can be even in technical circles is shown in the " explanation " in the *Financial Times*, December 29th, 1954, of the 1955 revised regulations. " Hitherto it has been a firm rule that the various Colonial Currency Boards or Currency Commissions, which are in charge of the local note issues, must deposit in sterling the full equivalent of their note issues."

[3] For instance in *Economic Development of British Guiana*, *cit. supra*, p. 109.

[4] Cf. Arthur Hazlewood, *Review of Economic Studies*, *cit. supra*, p. 49. " The total value of sterling tied up as a result of the rigid sterling exchange currency system amounted to something like 310 million at the end of 1951. When the regulations involve impounding sums of this magnitude one may well wonder if any possible benefits of the existing system are worth the cost." And " Sterling Balances

It is of course because the counterpart sterling is merely a currency redemption fund, and not the foreign exchange reserve of a colony's entire monetary system, that it can be withdrawn in the way proposed by the new regulations. By the general measure of practice international monetary reserves amounting to 100 per cent. or more of a national currency circulation are not excessive for a country with a central bank of issue and no gold or silver mines. This amount or more is held by countries with the different conditions of Cuba, the Dominican Republic and Japan. The United Kingdom evidently needs more. Smaller reserves in some cases are accompanied by the expectation of assistance from the United States with or without the frequent manipulation of exchange rates and import controls. It is curious that the writers who deplore the alleged heavy cost and burden of the colonial currency system have shown no regard for the likely cost of alternative systems. Yet it is by no means axiomatic that a national monetary institution could operate successfully without maintaining foreign exchange reserves, or that the commercial banks would not increase their charges in the face of the new risks. Moreover, it is only reasonable that an independent monetary position should end the trustee status of colonial government loans in the London market and the joint credit facilities the colonies enjoy through the Crown Agents. By the time all the implications of escaping from the present system had made themselves felt, costs might be found to be higher instead of

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and the Colonial Currency System: A Reply", *Economic Journal*, September, 1954, "The effect of the 100 per cent. reserve system is to compel the holding of this sterling and to prevent any of it from being spent on imports," *et seq.*

lower. This does not mean, however, that the colonies should not have their own monetary systems. You should like your own money for the same reason you like your own government, even if it is expensive and of little international significance, and most of the colonies are getting their own governments. A few years ago the Secretary of State said in reply to a question in Parliament, " We are all determined to pursue the economic and social development of the Colonial Territories so that it keeps pace with their political development ". No natural or other law has yet established the correct relation of economic to political development, but control of the currency is a historical symbol of sovereignty, and a national bank that is not a bank of issue is no more than a hollow façade. There seems to be little doubt that most colonies will before long have a complete change in their monetary system, which will then embody the international characteristics that have been prematurely attributed to them.

New York

A Note on the English Capital Market as a Source of Funds for Home Investment before 1914

By A. R. Hall

It is generally believed that the London new issue market in the years before 1914 was relatively unimportant as a source of funds for home investment. Thus Cairncross remarks that "The London Stock Exchange was of minor importance [for home investment] except for issues by the British government, corporations and existing companies, particularly railways",[1] and Paish comments on "the small scale of the new issue market in home securities".[2] That this view is so widely accepted is no doubt a tribute to the lasting qualities of Lavington's survey of the English capital market which, after more than a generation, is still required reading for students in this field, for it is to his analysis of the new issue market in the years immediately preceding 1914 that most subsequent writers have turned when considering this question.[3]

It is true, of course, that the above description of the role of the London market for home issues applies to the particular period with which Lavington was almost wholly concerned, especially to the years 1911–3, which provide the statistical data to illustrate his argument. If, however, Lavington had been writing a decade or so earlier and had used, for instance, data relating to the years 1896–8, he would have come to quite different conclusions about the relative importance of home and foreign issues and about the volume of funds flowing through the home new issue market. This, of course, is hardly a strong criticism of Lavington himself, who was concerned to examine the market at a particular period of time. The way in which his generalisations have been applied by later writers to the "pre-1914 capital market" is, however, a reflection on their historical sense.

In particular, since the publication of Cairncross's study of the long-term inverse movements of home and foreign investment there has been little excuse for the application of Lavington's view of the market to the whole of the period from say 1870 to 1914. While the London market was by no means perfect, it was not so imperfect that it did not reflect quite significantly these underlying major flows of real investment. Indeed, it would have been quite surprising if it had not reflected them, particularly in the middle 1870's and for most of the

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[1] A. K. Cairncross, *Home and Foreign Investment, 1870–1913*, Cambridge, 1953, p. 95. See, however, his qualifications, p. 102.

[2] F. W. Paish, "The London New Issue Market," *Economica*, N.S. Vol. XVIII, No. 69, February, 1951, p. 4.

[3] F. Lavington, *The English Capital Market*, London, 1921. See especially Chapter XXXI.

1890's. For the purpose of this note it is sufficient to show that for one of these periods at least—the later 1890's—the bulk of new issues was for employment at home. It may be worth mentioning, however, that a casual examination of some new issue data in the middle 1870's tends to confirm one's expectation for this period also.[1]

It is, unfortunately, impossible to prepare a series showing the actual amounts subscribed to new issues for use at home and abroad by British investors and the proportion of those issues actually passing through London in this period. Some idea of the orders of magnitude and of the prevailing direction of the flows can, however, be derived from the new issue series published by the *Economist*[2]—i.e. the series used by Lavington himself. A detailed analysis of this series has been made by Ayres for the period 1899 to 1913[3], though he, following Lavington, wrongly describes his figures as " London " new issues when " English " is in fact a more exact description of them, as the series includes issues made in the provinces to a significant extent. For this reason the subsequent comments here are in terms of the " English capital market " rather than the more conventional " London capital market ". In addition, on certain assumptions, a break-up of the *Economist*'s series into home and oversea issues can be obtained for the years 1895–9, without making an examination of all the individual issues, which fits fairly closely with Ayres' series. Figures for these earlier years are required because, while Ayres' figures for the years 1899–1902 show a clear preponderance of home issues, they are open to the objection that this predominance merely reflects issues by the British Government to finance the Boer War.

The method employed to obtain the estimates for 1895–9 is described below. First the separate industrial classifications in the *Economist*'s detailed breakdown of annual new issues have been initially classified as " oversea " or " home " issues. This break-down is presented in Table I. Now, while there is little doubt that the " oversea " industry classifications do cover issues which were almost wholly intended for employment abroad, this is not true of the majority of the " home " classifications so that some adjustment has to be made to this section to obtain the required division into home and overseas. Here it has been conservatively assumed that 15 per cent. of " home " new issues (excluding British corporation loans and home railways) was in fact for use overseas and the resulting amount added to " oversea " issues and deducted from " home " ones. The justification for this general procedure and for the particular proportion used is as follows: that it is well established that even in periods of active oversea investment only

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[1] See, e.g. the detailed list of companies formed in 1876 summarised in *The Bankers' Magazine*, 1877, pp. 93–7. Almost two-thirds of the amount offered by these companies was for use at home.

[2] Individual issues are summarised weekly. The annual figures are analysed in the " Commercial History and Review ".

[3] G. L. Ayres, " Fluctuations in New Capital Issues on the London Capital Market 1899–1913 ". Unpublished London M.Sc.(Econ.) Thesis 1934.

TABLE I
ENGLISH NEW CAPITAL ISSUES 1895–9*
(£000)

	1895	1896	1897	1898	1899
" OVERSEAS "					
Foreign Government Loans	19,632	20,989	10,615	24,103	9,900
Colonial Government Loans	9,081	4,787	13,685	11,016	7,399
Colonial and Foreign Corporation Loans	1,168	4,925	415	2,492	496
Foreign Railways	10,360	4,633	5,468	12,003	11,854
Indian & Colonial Railways		5,448	4,378	3,093	7,018
Mining Companies—					
Rand	4,808	—	2,960	1,745	3,071
Australasian	6,792	8,350	2,739	1,050	1,756
Canadian, Klondyke, etc.	—	—	2,367	2,203	—
Other Mines	3,204	6,918	4,905	2,085	6,788
Land, Exploration and Financial	6,556	6,175	7,813	5,082	6,539
Tea and Coffee Plantations	—	1,357	2,327	—	—
" HOME "					
British Corporation Loans	7,056	3,778	7,652	6,382	6,127
Home Railways	6,740	7,735	7,465	11,090	8,756
Banks and Insurance	1,490	—	2,538	1,458	2,043
Breweries and Distilleries	5,645	18,162	17,951	18,387	8,525
Companies to acquire Patents	2,799	2,285	5,182	5,155	2,658
Stores and Trading Companies	5,099	9,285	9,000	6,648	5,462
Hotels, Theatres and Entertainments	1,172	4,290	5,017	2,860	2,867
Manufacturing	—	8,852	15,383	16,075	21,582
Gas, Water and Electricity	1,354	2,693	3,304	3,703	4,649
Docks, Harbours and Shipping	—	2,707	1,682	3,017	3,584
Cycles and Appliances	—	17,187	7,193	155	—
Motor Cars	—	1,672	380		—
Miscellaneous	11,734	10,449	16,872	10,371	12,098
TOTAL	104,690	152,677	157,299	150,173	133,170

* Source: The *Economist*'s annual " Commercial History and Review ". Reclassified as described in text.

relatively small amounts have been raised publicly by undertakings within these classifications;[1] that this was not a period of active oversea investment; that qualitative comment on the series by the *Economist* indicates that the bulk of the relevant issues were for investment at home; that this is roughly the proportion in the appropriate classifications which obtained in the years 1899 to 1903 according to Ayres' calculations; and that for the first six months of 1896 a detailed analysis of individual issues showed that only 6 per cent. of issues in these categories were for use abroad which suggests that the assumption of 15 per cent. will understate rather than overstate the actual proportion of home new issues in these years. To obtain the final home v. overseas break-down a further adjustment is, however, necessary. A substantial proportion of the *Economist* series was issued not in England alone, but on oversea markets as well. These have been dealt with on the generous assumptions that all such issues were for employment overseas[1] and that half of this total amount was subscribed for by British investors.[2] The resulting break-down of new issues into home and overseas from 1895 to 1899 is included in Table II which also includes Ayres' figures for the period 1899 to 1913, adjusted in the manner just described for issues made jointly in England and some other country.

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[1] Thus in the period 1911–13, if public utilities are excluded, companies within these classifications accounted for between 10 per cent. and 15 per cent. of total oversea issues. Cf. G. L. Ayres, *op. cit.*, Table 17. This table refers only to issues which were offered in England alone.

TABLE II

ENGLISH NEW CAPITAL ISSUES AND NET HOME INVESTMENT 1895–1913

Year	New Capital Issues For Investment			Net Home Investment (4)	Ratio of Home New Issues to Net Home Investment (5)
	At Home (1)	Overseas (2)	Total (3)		
	(£m)	(£m)	(£m)	(£m)	(1) ÷ (4)
1895	39·7	58·5	98·2	90	·44
1896	77·5	61·8	139·3	106	·73
1897	86·9	64·6	151·5	111	·78
1898	75·1	57·0	132·1	139	·54
1899	69·2	59·5	128·7	174	·40
1899	67·4	60·8	128·2	174	·39
1900	132·3	30·9	163·2	177	·75
1901	118·4	38·3	156·7	173	·68
1902	85·5	60·3	145·8	163	·53
1903	40·5	63·7	104·2	167	·24
1904	48·4	66·1	114·5	167	·29
1905	46·2	111·0	157·2	167	·28
1906	36·7	74·8	111·5	147	·25
1907	30·1	81·7	111·8	113	·27
1908	47·6	118·7	166·3	109	·44
1909	17·5	150·5	168·0	112	·16
1910	53·7	182·0	235·7	110	·49
1911	26·2	142·9	169·1	105	·25
1912	38·0	150·2	188·2	109	·35
1913	31·6	153·8	185·4	143	·22

Sources: New Issues 1895–9. As in Table I but adjusted as in text.
New Issues 1899–1913. Table 7 of G. L. Ayres' " Fluctuations in New Capital Issues on the London Capital Market 1899–1913 " but adjusted as in text.
Net Home Investment 1895–1913. J. H. Lenfant, " Great Britain's Capital Formation 1865–1914 ", *Economica*, 1951, p. 160.

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[1] This is virtually what Ayres found, *op. cit.*, Table 7.

[2] This assumption appears to be generous for the period with which we are here primarily concerned, i.e. 1895–9, if we can accept the *Economist*'s comments on these issues in its annual Commercial Histories. It may, however, lead to some understatement of total oversea new issues in the last decade of the series. It is also true that some oversea issues were introduced onto the London market throughout the period in ways which meant that they could not be picked up by the *Economist*.

Neither the estimates presented here nor Ayres' calculations are accurate guides to the flows of " new money " through the new issue market. In the case of oversea issues this is so partly because such series as these take no account of the repatriation of capital; partly because the series relate to the amount of capital offered, not that actually paid up; and partly because in a number of the classifications, in particular mines, there often was a very big difference between the amount subscribed by British investors and that spent overseas, the difference (when the sums demanded were actually subscribed) representing a transfer of ownership within Britain and not an actual investment of funds abroad.[1] It is not surprising then that in the 1890's, for instance, net investment abroad (the balance of payments figure) was only about one-third of overseas new issues as calculated here.[2] In the case of home issues, a further point to be noted is that a large proportion of the issues was made by " new " companies and amongst such companies very often a high proportion of the funds raised by the new issue was used to make payments to vendors.[3] Some conversions of debts from one form to another are also included in the *Economist*'s series.

For these reasons one cannot expect too close a correlation between the movements of the new issue series and those of actual new investment and, in fact, the year-to-year movements of the two series do diverge fairly frequently. Nevertheless the long waves of home and foreign investment do emerge quite distinctly in the new issue series. Thus, if the estimates presented here are more or less correct, home issues predominated in the market between 1896 and 1903 inclusive (1902 if the British Government Boer War issues are excluded from home investment). Only after the latter year is the traditional view of the importance of oversea issues vindicated. This is after all, more or less,[4] what one would expect in a market as well organised as the

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[1] That is, in many gold mining promotions leases were purchased abroad for say, £10,000 (actual overseas investment) and offered in London for perhaps £100,000 (new capital issue if shares to vendors are ignored). The difference, if subscribed, was merely a transfer of funds from the hands of investors into the pockets of promoters. Cf. the *Economist*, 1896, p. 518, for a discussion of this sort of practice amongst West Australian gold mines.

[2] Roughly speaking, it is not improbable that there was an inflow of capital into the United Kingdom equal to about one-third of nominal new overseas issues from such countries as Australia, South America and the United States. An inflow of this order is certainly true for Australia which, in the years 1895–9 inclusive, accounted for £50·7 m. of *Economist* new issues offered but only had a net import of capital of £29·6 m. Another third could well be accounted for by the difference between the nominal amount offered and that actually raised. Thus, taking total home and overseas issues together over the same period only £405 m. was actually called up on the £650 m. offered in these (and earlier) years.

[3] The proportion was as high as 81 per cent. in 1900 according to Ayres' calculations, *op. cit.*, Table 10. It should be noted that these payments do not include the issue of specifically vendors' shares which are excluded from the *Economist*'s series.

[4] The fact that home new issues fell off more rapidly after 1901 than did actual home investment needs further investigation. It is clear, however, that part of this divergence is due to fluctuations in investment in housing, movements in which one would not expect to find directly reflected in the new issue market.

English capital market. It was by no means so imperfect as Lavington's view would have us believe.

Furthermore, while the calculations based on them must necessarily be rough and ready, it is worth while looking at the ratios of home new issues to net home investment[1] included in column 5 of Table II. There is no doubt at all that these ratios are too high. Thus it is generally considered that the proportion of home investment financed through the new issue market in the last few years of the period was about 10 per cent. and not the 25 per cent. of column 3.[2] While issues by " new " companies probably accounted for a larger proportion of the total amount raised in the 1890's as compared with the later period, and while the proportion of cash raised by these companies which was merely paid over to vendors was probably much higher in the earlier period,[3] it is unlikely that these factors are sufficient to account for the change in the ratio from an average of about ·75 in the earlier years to one of about ·25 in the later period. Hence there seems to be good grounds for believing that, in the period when new home investment was a high proportion of total new investment, greater than " normal " demands were made on the new issue market by home borrowers with the result that some such proportion as 25 per cent. of new home investment may have been financed through this mechanism at this time.

It is not only in terms of the character and volume of flows that Lavington's un-historical analysis of the capital market has misled later writers. There also seems to be sufficient evidence available to be doubtful about his views on the efficiency with which the market provided its services to home investment. Lavington admits that " high class " home securities by which he means railways, and municipal and local government issues were marketed on reasonable terms and relatively cheaply. He also allows that long-established " blue chip " industrials and most issues made on provincial markets were in a similar position. He implies, however, that almost all the rest of the " industrials " appearing on the London market were at the mercy of fly-by-night *ad hoc* promoting groups whose main aim it was to make a profit out of the process of issue, and who had no interest in the subsequent investment value of the securities which they had introduced to the market.

There is no doubt that promotions of this character were brought before the public, though it is worth remembering that they were not limited to home issues—the worst excesses of this type in the period under consideration both in terms of volume of funds involved and of the number of issues made were undoubtedly to be found amongst oversea mining promotions (notably in the Kaffir Circus and in the Westralian gold mining market). As Professor Paish has argued, the London new issue market, as constituted in 1914, was in need of renovations so that excesses of this type could be eliminated. Nevertheless, there are good grounds for believing that the area of the market, within which operations of this type occurred, has been exaggerated. Further, as a corollary to this view, it may well be argued that the virtual lack of home new issuing houses in the period before 1914 was not necessarily a weakness in the marketing structure. Conditions may simply have been such that there was no major function for them to perform.

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[1] As calculated by J. H. Lenfant, " Great Britain's Capital Formation, 1865–1914 ", *Economica*, N.S. Vol. XVIII, No. 70, May, 1951, p. 160.

[2] See, e.g. G. L. Ayres, *op. cit.*, p. 202; F. W. Paish, *op. cit.*, p. 2; A. K. Cairncross, *op. cit.*, p. 96.

[3] The proportion of cash passing to vendors, declined from c. 75 per cent. for the years 1899–1903 to c. 40 per cent. in the period 1910–13; G. L. Ayres, *op. cit.*, Table 10.

The basis for questioning these views of the importance of the company promoter and of the inadequacy of issuing house facilities in the home market is to be found in a consideration of the nature of the new companies being formed in this period. A check through the *Economist*'s summary of prospectuses received (though not a detailed statistical examination of them) gives the impression that the majority were new enterprises in a legal sense only.[1] They were, in fact, conversions of existing firms to limited liability and listed company status. In some cases, notably in the brewing industry, advantage was taken of market conditions to unload such firms onto the public at prices which were unlikely to be justified by subsequent events. In others, especially in the cycle boom, advantage was taken of a speculative mood to indulge in even more questionable practices. In what appears to be the majority of cases however, the conversions were made simply to obtain additional capital which was usually obtained in such a way (e.g. issues of preference shares and debentures) that the control of the firms' policies still lay with the original owners. Firms such as these latter ones did not need or want the services of a company promoter.[2] If the majority of companies approaching the new issue market were of this type then one must certainly doubt the traditional views described above. Furthermore until it has been shown that the costs of issue in this situation were excessive one remains sceptical of the view that the marketing machinery was inadequate largely because there were virtually no home issuing houses.[1] In a period when most of the issues were relatively small and when the market (more correctly, perhaps, markets) was largely made up of large private investors it may well have been that there was little need for the services of the modern type of issuing house.

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[1] Ayres' definition of new companies, as those registered within a period of less than twelve months prior to the date of issue—a distinction followed by Cairncross—is misleading here as most of these " new " companies were in fact old firms in a new guise.

[2] Thus, as far as one can judge from the accounts of the approaches to the market in this period of a number of firms whose histories have been published, there is no sign of use being made of issuing houses or company promoters or that there was much difficulty in obtaining the required funds. See, e.g. C. Wilson, *The History of Unilever*, London, 1954, Vol. I, pp. 45–6, for Lever Brothers Ltd (1894); Vol. II, pp. 80–1, for Van de Bergh's Margarine Ltd. (1895); C. G. Dobson, *A Century and a Quarter*, London, 1951, pp. 60–2, for Hall & Co. Ltd. (1898); S. Pigott Hollins, *A Study in Industry* 1784–1949, Nottingham, 1949, pp. 126–8, for William Hollins & Co. Ltd. (1908). The evidence of such a small number of companies is not, of course, conclusive, merely corroborative.

If these doubts are justified and if the estimates made earlier are of the right order of magnitude then it is clear that the conventional view of the working of the pre-1914 English capital market has to be revised considerably. On the one hand it was, at times at least, much more important as a source of funds for home investment than is usually believed. On the other hand a case has yet to be proved that the machinery for home new issues was grossly inadequate. Finally, as it would appear that home borrowers could obtain large amounts through the new issue market when they wanted to (i.e. in the periods when home investment formed a large part of total investment), there seems to be little justification for the view that imperfections in the organisation of the capital market were sufficient in themselves to produce a bias in the direction of the flow of funds through it and to account for the relative inefficiency of British industry in the decade or so before 1914.[2] If these biases and inefficiencies did exist the reasons for them have to be found, except perhaps in a minor degree, elsewhere than in the structure of the capital market.

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[1] Compare the situation in contemporary Australia where there are virtually no issuing houses but, nevertheless, an efficient new issue market.

[2] For a recent summary statement of this view see J. Saville, "A Comment on Professor Rostow's British Economy in the Nineteenth Century," *Past and Present*, Vol. I, No. 6, November, 1954, especially pp. 77–8.

The Estimation of the Time-Response Functions in Complete Economic Systems

By J. WISE

INTRODUCTION

In a recent issue of this Journal, Phillips[1] discusses the problems arising in the least-square estimation (from time-series data) of the form of the time-response function in a macro-economic relationship which forms a part of a complete dynamic system of such relationships. The importance of the subject is made clear in that paper and also in other writings[2] in the field.

Phillips shows that a necessary condition for the least-square estimates of the time-response function to be asymptotically unbiased and consistent is that the highest order of autocorrelation coefficient between the disturbances which is non-zero should be less than the delay in the feedback of the system.[3]

Unfortunately, this condition is rather restrictive, and even if it obtained, a high degree of autocorrelation between the successive disturbances would, in most cases, render the least-square estimates highly inefficient in the sense that a large proportion of the statistical information available in the time series would be wasted.

However, in my article[4] referred to by Phillips (footnote, p. 110) an estimation procedure is recommended for long series, which yields estimates of the time-response functions which are asymptotically unbiased and consistent and which are (at the same time) fully efficient. The method depends on the form of the autocorrelation function of the disturbances being known exactly or to a sufficiently close degree of approximation. A simple autoregressive approximation will quite frequently suffice. Since, if, and only if, the exact form of the autocorrelation function is used, the observed correlogram of the estimated residuals will converge in probability to the assumed theoretical form, it will always be possible, with sufficiently long series, to approximate the true time-response functions to any degree of accuracy. Iterative procedures are available which may be expected usually to converge quite quickly.

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[1] A. W. Phillips (1956): "Some notes on the estimation of time-forms of reactions in interdependent dynamic systems," *Economica* XXIII, 99-113.

[2] Notably, A. Tustin (1953), "*The mechanism of economic systems*", Heinemann, London; A. W. Phillips (1954), "Stabilization policy in a closed economy", *Econ. Journal*, 64, 290-323; and R. G. D. Allen (1955) "The Engineer's approach to economic models", *Economica*, XXII, 158-168. See also footnote (4).

[3] This is not a sufficient condition. Additional conditions are needed for consistency to be ensured ; although these are not all stated by Phillips, this is a very minor point—particularly in view of the context in which he suggests his results may be used.

[4] J. Wise (1956) "Regression analysis of relationships between autocorrelated time series", *Journal of the Royal Statistical Society*, Series B, *18*, 240-256. See also Chapters I and VII of the author's Ph.D thesis (1955) filed at the University of London library. The author wishes to acknowledge that his interest in the study of the statistical estimation problems presented by closed-loop systems was greatly stimulated in 1953 both by his collaboration with Dr. Phillips on certain mathematical problems arising out of his investigations of stabilization policy, and by reading Professor Herman Wold's *Demand Analysis*, J. Wiley, New York. Nearly all the results quoted in this article were derived by the author in 1953. The author has also had some useful discussion with Mr. W. M. Gorman.

The computational technique for obtaining such estimates involves using an autoregressive-type transformation of all the variables in a relationship, to reduce the transformed series of disturbances to a non-autocorrelated form. Least-square estimation may then be applied to the transformed relationship.

Although the results extend easily to a wide class of non-linear systems and systems defined on a continuous time-parameter, we will consider here only linear models defined on a discrete time-parameter.

THE NATURE OF THE ESTIMATION PROCEDURE

If a system consisting of two interrelated variables, x_t and y_t, is stationary and non-deterministic (which means, roughly, that the joint probabilities of observed sets of measurements on the variables are unaffected by a change in the origin of the time-scale, and that the variables are measured about their respective means), then the relationship between these two variables can be expressed in the form

$$(1) \qquad y_t = \sum_{i=0}^{\infty} \alpha_i x_{t-i} + \epsilon_t$$

$$x_t = \sum_{i=0}^{\infty} \beta_i y_{t-i-1} + \eta_t$$

This system is given as Example (3) in Part I of my article referred to above, and is equivalent to the approximated relationships between consumption and income given by Phillips. The system is " recursive ", by which is meant that the time-delay in the feedback is not less than the interval defining the time-parameter of the system. The only other restriction that needs to be placed on the forms of the time-response functions is that the number of parameters which require estimation in these functions is of a lower order of magnitude than the number of observations in the time-series. The time-response functions[1] are, respectively, $\alpha(E) = \sum_{i=0}^{\infty} \alpha_i E^{-i} = \alpha_0 + \alpha_1 E^{-1} + \alpha_2 E^{-2} + \ldots$, and $\beta(E) = \sum_{i=0}^{\infty} \beta_i E^{-i-1} = \beta_0 E^{-1} + \beta_1 E^{-2} + \beta_2 E^{-3} + \ldots$, where $E^{-s} x_t$ represents x_{t-s}. The variables ϵ_t and η_t represent disturbances.

All four series (x_t, y_t, ϵ_t, η_t) are assumed to be stationary, and to possess autocorrelation functions. Provided that the form of the autocorrelation function of ϵ_t (or η_t) is known, α (E) (or β (E)) can be evaluated in long series, without bias and with maximum efficiency, by employing estimators of the Gauss-Markoff type. In the general case it is necessary to assume that ϵ_t and η_t are not intercorrelated, but for any of a very wide class of recursive systems this condition may be relaxed for all, or at least some, of the relationships to be estimated.

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[1] In fact, α (e^p) and β (e^p) are the transfer functions of the system (see Tustin, *op. cit.* and Allen, *loc. cit.*). The method described thus provides estimates of the transfer-function locus in the complex plane.

For a mathematical formulation of these estimators, the reader is referred to my article mentioned above. The procedure by which the estimators of the Gauss-Markoff type are derived can, however, easily be seen to be equivalent, when long time-series are used, to the following procedure which is intuitively and computationally simpler.

The structural equations in (1) are separately transformed to make the disturbance terms non-autocorrelated. We obtain the transformed equations :

$$\begin{aligned} y'_t &= \alpha(E)x'_t + \epsilon'_t \\ x''_t &= \beta(E)y''_t + \eta''_t, \end{aligned} \tag{2}$$

by applying the transformations

$$\epsilon'_t = \lambda(E)\epsilon_t = \epsilon_t + \lambda_1\epsilon_{t-1} + \lambda_2\epsilon_{t-2} + \dots,$$

and similarly for x'_t and y'_t, and

$$\eta''_t = \delta(E)\eta_t = \eta_t + \delta_1\eta_{t-1} + \delta_2\eta_{t-2} + \dots,$$

and similarly for x''_t and y''_t, $\lambda(E)$ and $\delta(E)$ being respectively chosen to ensure that ϵ'_t and η''_t are non-autocorrelated.

The required estimates are then obtained by applying the method of least squares directly to each of the equations in (2). These estimates are single-equation estimates, but differ from the straightforward application of least-squares to the separate equations in (1).

By means of correlogram tests based on the estimated disturbances the suitability of a particular choice of $\lambda(E)$ and $\delta(E)$ can be examined. A good approximation to the true forms is all that is really needed, and first-difference or simple autoregressive transformations will frequently be quite adequate.

In cases where the estimators of the Gauss-Markoff type are inapplicable, or where it is desired to use alternative methods to check them, reduced-form estimates and limited-information estimates of various kinds can be used. Some of these procedures have been investigated in research undertaken by the Cowles Commission.[1]

If the system consists of several variables, and is stationary and non-deterministic, then the relationships between any pair of variables (x_t and y_t) of the system can be expressed in the form of the equations (1). In such circumstances it may, under rather more restrictive conditions, be valid to estimate the time-response functions by the methods described above. In such cases the time-response functions $\alpha(E)$ and $\beta(E)$ represent the total response from all sources, direct and indirect. An example of such a system is that given in Phillips' paper, where a network of equations involving several variables is reduced to two, Phillips' equations (1) and (5). The resulting estimates derived from these relationships are total-response functions. For the method to be valid the parameters involved in these must be fully indentified. Where it is desired to disentangle the direct and indirect responses, these must be introduced explicitly. This will involve the explicit introduction into the model of variables other than x_t and y_t, whose effects are, in (1), subsumed in the total-response functions and the disturbances, and will usually be necessary when a structural analysis is undertaken.

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[1] T. C. Koopmans, ed. (1950) : *Statistical Inference in dynamic economic models* (Cowles Commission Monograph *10*), J. Wiley, New York; and T. C. Koopmans & W. C. Hood, eds. (1954) : *Studies in econometric method*, Cowles Commission Monograph 14, J. Wiley, New York.

CONCLUDING REMARKS

Some of the advantages of using the estimation procedure discussed above can now be summarized as follows :

(i) It is not necessary to make restrictive assumptions regarding the forms of $\lambda(E)$ and $\delta(E)$, and the relationships between these and $\alpha(E)$ and $\beta(E)$.

(ii) If a great deal is known about one equation of a system, ignorance about the rest of the system does not reduce the precision of the estimates.

(iii) The estimates are, for long series, unbiased and fully efficient.

(iv) Computationally they are only slightly more difficult to obtain than are the direct least-square estimates.

(v) The method, by explicitly employing good approximations to the autocorrelation functions of the disturbances, gives a more complete and integrated picture of the behaviour of the series.

(vi) The correlogram of the residuals can be used for testing the appropriateness of the approximate forms assumed for $\lambda(E)$ and $\delta(E)$.

(vii) The electronic methods suggested by Phillips for least-square and trial-and-error fitting can be extended to cover the estimation methods considered here.

For a discussion of most of the difficulties, the reader is referred to Phillips' paper. He is, however, warned that very little indeed is as yet known about the analysis of short time-series of the length usually encountered in economic studies.[1]

University of Birmingham.

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[1] For some research into this field see the author's Ph.D. thesis, cited above, and his forthcoming article, " Regression analysis based on short time-series ".

A Testimonial from Ricardo

By B. A. Corry

As far as is known no trace of the Ricardo-Torrens correspondence remains extant. It is therefore of interest to report the finding of a letter from, or at least purporting to be from, Ricardo to Robert Torrens. The letter is actually reprinted from *The Bolton Chronicle*, of November 17th, 1832. It was quoted by Torrens in a speech made to the Electors of Bolton as part of his electioneering campaign of 1832; this was the first campaign of the " reformed " Parliament. Previously he had been one of the members for Ashburton, but under the constituency reshuffle the seats there had been reduced to one, the other being added to Bolton, for which Torrens was now standing.

This letter, which represents, as it were, a testimonial asserting the *bona fide* claims of the candidate, refers to the first of Torrens's various attempts to enter Parliament; this was in 1818, when he stood as Whig candidate, for Rochester. The result of the poll was an easy victory for Lord Binning, and a petition presented by Torrens urging the disqualification of the successful candidate was dismissed as frivolous.[1]

Ricardo's mention of Torrens's ability as a political economist, particularly with regard to financial matters, may occasion some surprise, for we know that in the early stages of his career as an economist, Torrens was an ardent Anti-Bullionist.[2] Yet the letter does fit the general picture suggested, for example, in the letters to Malthus and others, to be found in Dr. Sraffa's definitive volumes. It is known that Ricardo first met Torrens at a dinner party on April 16th, 1815,[3] and of his impressions he wrote to Malthus, " Mr. Torrens is a very gentlemanly man "; however, doubts were expressed as to his views on economic matters; the subject of the currency, for example, " he did not appear correctly to understand ".[4] But within a year Ricardo was prepared to accept Torrens into the fold of Classical orthodoxy, and regard him as a more than competent expositor of the Ricardian position.[5] This is further substantiated by the letter printed

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[1] See the article on Torrens in the *Dictionary of National Biography*.

[2] In particular he was the author of *An Essay on Money and Paper Currency*, 1812.

[3] P. Sraffa (ed.) *Works of David Ricardo*, vol. 7, p. 219.

[4] *Ibid*., vol. 7, p. 219.

[5] It is clear that Torrens was " accepted " on the strength of his pamphlet *A Letter to the Rt. Hon. The Earl of Liverpool on the State of the Agriculture of the United Kingdom & co.*, 1816. Cf. Sraffa, *op. cit.*, vol. 7, p. 24.

To some extent, however, Ricardo's doubts remained, for in a letter to McCulloch dated April 7th, 1819, he wrote: " We are promised two works on Political Economy, one from the pen of Mr. Malthus—the other from that of Major Torrens. I am well acquainted with the opinions of both these gentlemen, and though I think they below. Moreover Torrens himself, when later in life accused of economic heresy—as so often he was—always maintained that he was but applying the strict Ricardian analysis.

RICARDO TO TORRENS

LONDON, UPPER BROOK ST.,
15 June, 1818, 5 O'Clock.

My Dear Sir,—I have this moment returned home, and find your letter dated from the King's Head Inn, Rochester (13th June) on my table.

Mr. Philips is in Sussex,[1] attending his own election, and therefore he cannot be applied to attest that you are a fit and proper person to serve in Parliament, in time to be of any use to you,—but from my knowledge of Mr. Phillips opinion of you, I can attest that those are his sentiments, and if he were in town I am sure he would say that and much more in your favour. My own acquaintance with you entitles me to give it as my opinion that you would render great service to your country in the House of Commons. From your knowledge of Political Economy, your advice would be of essential use in all financial questions, and at present there appears to be a great dearth of that sort of talent amongst our legislators. It will give me great pleasure to hear of your success.

As High Sheriff for the County of Gloucester, I shall be obliged to leave town the latter end of the week, to preside at the election of members for that county.

I am sorry that I did not see your friend.

I am, most truly yours,
DAVID RICARDO.

The Durham Colleges,
University of Durham.

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will assist in disseminating many sound principles, yet I think they adhere too firmly to their old associations to make a very decided progress in the science." Sraffa, *op. cit.*, vol. 8, p. 20.

[1] The identity of " Philips " or " Phillips " is uncertain, it might possibly refer to George Philips, M.P. for Wootton Bassett, 1820-26. On the other hand the mention of " Sussex " suggests G. R. Philips, M.P. for Horsham, 1818-20.

Book Reviews

Economic Commentaries. By SIR DENNIS ROBERTSON. Staples Press Limited. 1956. vii + 174 pp. 16s.

As it is hardly necessary for a reviewer to explain what a collection of Robertsonian essays is like or to say that it is worth reading, I shall merely say what the essays are about.

The first, and longest, is the only one which has not been previously published. In it Professor Robertson surveys and comments upon " Some recent writings in the theory of pricing ". After a discussion of Frisch's recently published article on Marshall, he takes up the old problem of how competitive equilibrium can exist in an industry with a downward-sloping long-run supply curve. In addition to the external economies answer, Professor Robertson suggests the possibility that somehow the representative firm can have a falling cost curve without any particular actual firm ever having one. This, to the present reviewer, is one of the few obscure arguments in these essays, although the passage quoted from Harrod as being in accord with Robertson's view is comprehensible enough. Harrod's point is that it takes time for firms to grow even when they know that new economies of scale can be attained. In more formal terms, costs depend not only upon the level of a firm's output but also upon its rate of increase. However, once we want to bring in this sort of consideration it may well be better to frame our discussion round the question of the growth of firms (along the lines of Edith Penrose's work) than in equilibrium terms. The second part of the essay on pricing is chiefly concerned with the controversies about excess capacity and about profit maximization, and is no more capable of summary than the first part. One point which is made is particularly important, the relation between market imperfection and the multi-product firm.

The second essay, on Utility, appeared in the *Economic Journal* in 1954; it is a discussion for the author's " fellow idiots " of some of the writings published since his earlier essay on the subject. It is followed by " More notes on the rate of interest ", which asks some questions of Patinkin (before his book appeared) and examines Dr. Roosa's thesis that the effect of interest rate changes upon the way lenders hold their assets exerts a strong influence on business activity. Fourthly comes " Thoughts on meeting some important persons ", from the *Quarterly Journal of Economics*.

All these first four essays are aimed at fellow economists. The final six essays, on the other hand, are more popular and less concerned with theory. The subjects range from inflation to " ear stroking " (a method of dealing with donkeys) and include a masterly explanation of what the convertibility problem is all about. Any economist who does not enjoy these essays and the fragments of verse which conclude the volume should abandon hope.

RALPH TURVEY.

Sterling-Dollar Diplomacy. By RICHARD N. GARDNER. Oxford University Press. 1956. xxii + 423 pp. 42s.

As Mr. Harrod explains in his foreword, this work was begun when Mr. Gardner came over from America, where his training had been primarily in law, to further at Oxford his study of economics. With loyalties tying him to both countries, with his training in both law and economics, and with his interest in " the interaction between official policy and public opinion'', he was unusually well placed to embark on this study in Anglo-American economic diplomacy. To these advantages must be added his exceptional " scholarship, good judgement, and considerable objectivity " and " that rare gift—a fine command of English prose style ".

In this work, Mr. Gardner takes the story of Anglo-American collaboration in the reconstruction of multilateral trade up to the time of its initial failure, i.e. very little beyond the retreat from convertibility in 1947. His main topics are the Atlantic Charter, Lend-Lease, the Fund and the Bank, the Loan and the I.T.O. It is a sad and sobering story, a timely reminder of the limitations of human foresight and judgement, the tyranny of doctrines and of past experience, and the precariousness of friendships. Admittedly the ultimate tragedy of an Anglo-American estrangement was averted, but only in the shadow of the Cold War.

How could there " have been such grave and utter misunderstanding of the other point of view as between the two partners, the United States and Britain, locked in a close alliance during the war "? One cause was a widespread failure to understand Britain's permanently weakened position in the post-war world. " At the end of the war Americans tended to regard Britain as one of the three great ' super-powers ' ", as a serious and none too scrupulous " political and economic rival " (p. 344), whose temporary difficulties should be exploited to make her promise to play henceforth under American rules. Our own attitude on the other hand was ambivalent : it vacillated between complacently accepting the American estimate of our intrinsic importance, and anxiously facing the bleak realities of our post-war position. Hence the Americans consistently overrated our ability to undertake commitments (such as to restore convertibility or to abolish Empire Preference) required by the goal of non-discrimination, while our own reaction, which might have been persuasive if it had been consistent, was uncertain and unstable, and indeed almost hysterical after the " traumatic experience " of August 1947. The other main cause of trouble was that the British set against the American doctrine of non-discrimination their own doctrine of full employment *à l'outrance*, and the conflict between the two doctrines was greatly exaggerated both because the possibility of immediate discrimination against dollar goods was vastly overrated (p. 336) and because of the British obsession about a forthcoming American slump.

To these basic ingredients of Anglo-American misunderstanding must be added others : e.g. the conflict of personalities, the hardening of attitudes, the manœuvres of party politics, the dressing up of facts to make them acceptable to the electorate. All these, and others, are analysed with consummate skill and sympathetic understanding by Mr. Gardner.

This is an outstanding book, which deserves to be read not only by economists, but by all who claim any interest in politics, government or international affairs.

BRIAN TEW.

The Theory of Customs Unions. By J. E. MEADE. North Holland Publishing Company, Amsterdam. 1955. pp. 121. 15s.

Taking two countries, called for convenience the Netherlands and Belgium, which have succeeded in forming a full customs union, Professor Meade intends in his book to enquire "whether the removal of barriers on their mutual trade by the Netherlands and by Belgium—all other protective barriers to trade remaining unchanged—is likely to lead to the employment of existing economic resources in more or in less economic ways".

Although the problems of the working of an economic union are outside the scope of the book, Chapter I gives a brief but comprehensive view of the types of policies which may be adopted by the partner countries for the maintenance of full employment and balance of payment equilibrium. Emphasis is put on the necessity of a sufficient flexibility of wage rates and of other costs within both partners to fit in with the necessary degrees of domestic inflation or deflation. On the other hand the assumption of fixed rates of exchange is viewed by the author as an undesirable one. The use of the weapon of exchange rate variations would "usually ease the achievement of balance of payment equilibrium and the maintenance of real freedom of trade and payments within an economic union". The rules of the game for the balance of payments of an economic union are given systematically in Appendix I.

But the central field of enquiry is the efficiency in the use of resources. This has a quantitative and a welfare aspect. At the start Professor Meade is led to question the conclusions about "trade creating" and "trade diverting" effects, reached by Professor Viner in "The Customs Union Issue". Professor Meade shows that Professor Viner's analysis appears most relevant only in special cases such as those in which customers' demand in one country is inelastic and in which costs of production everywhere are constant. These limitating assumptions have to be removed and Professor Viner's theory has to be rebuilt accordingly. Professor Meade has made an important contribution not only in the criticism of Professor Viner's analysis but also in the reconstruction of the theory. He has taken into account both the quantitative effects on trade and the consequences on welfare. The analysis is penetrating. Numerous cases are considered, while primary, secondary and tertiary repercussions are distinguished. "Our main conclusion," writes Professor Meade, "must be that it is impossible to pass judgement upon customs unions in general. They may or may not be instruments for leading to a more economic use of resources. It all depends upon the particular circumstances of the case." But some generalisations may nevertheless be made. Nine of them are proposed all of which, though they may not be universally true, yet appear to have the value of theoretical principles.

Based upon three public lectures delivered at the Nederlands School of Economics in Rotterdam under the auspices of Professor F. de Vries Stichting, this book is concise and stimulating. It will prove extremely valuable for those who wish to get a clear and precise view of the matter.

PAUL ROUSSEAUX.

Trends and Cycles in Economic Activity. By WILLIAM FELLNER. Henry Holt & Co., New York. 1956. xiv + 411 pp. $5·00.

This is designed as a general survey of its field, but it has a distinctive approach which lifts it out of the usual run of textbooks. The chief emphasis is on the process of long-term growth in advanced countries, but a real attempt is made to integrate the treatment of fluctuations with that of the trend, and the problems of backward countries also receive some discussion.

The central thesis is that the principal requirement for harmonious growth is that technical progress or population increase should, by relieving the scarcity of factors of production, afford adequate offsets to the tendency to diminishing returns from investment that would otherwise result from the increase in the amount of capital relatively to labour and natural resources. Moreover these offsets must not operate in such a way as to cause a fall in real-wage rates, since this would disrupt the system politically. The other two chief requirements of steady growth are that undue disproportionalities between sectors should be avoided and that monetary arrangements should allow a reasonably stable price level. A statistical appendix examines how far the principal requirement has been satisfied in the United States. This calculation inevitably involves hazardous assumptions, but it is a brave attempt and highly relevant to the theoretical discussion. The capital-output ratio is found not to have altered significantly in the long run, but there does appear to have been a slight fall in the rate of profit on capital. This is interpreted to mean that the pace of improvements has not been quite enough to prevent diminishing returns (hence the fall in the profit rate); but at the same time improvements have had a slightly capital-saving bias (hence the absence of a rise in the capital-output ratio notwithstanding the fall in the profit rate).

This central argument is lucidly developed, and the conclusions do not seem to be greatly affected by the rather cavalier treatment of the difficulties involved in defining capital and its marginal product. Professor Fellner deliberately does not make the expansion of effective demand a separate requirement for growth, on the ground that if the other requirements are fulfilled effective demand will be adequate. He does not, however, make entirely clear what the process is by which the alleviation of factor scarcity ensures an adequate level of investment, as distinct from merely making it possible. It raises the marginal physical product of investment for the economy as a whole, but this needs to be translated into the marginal productivity in terms of value to the individual firm in order to become an incentive to action. One would like to see this translation made rather more explicitly.

The author's desire to fit as much as possible into his theoretical framework causes occasional signs of strain and perhaps lessens the usefulness of the book as a general survey for students. The terminology is a little peculiar in places, e.g. the use of " desired " investment to mean a level such that if planned saving turns out equal to it, the same rate of addition to the stock of capital will be planned for the next period. Issue may also be taken on a number of particular points. There is a serious slip in the forecasting method described on p. 329, where it is suggested that if in the period ahead full capacity output appears likely to exceed demand, *a sharp reduction* in investment is foreshadowed. The correct inference is that a *low* level of investment is to be expected. The stated method would give quite the wrong answer at the bottom of the slump.

Although the book cannot be considered an entirely satisfactory survey of the field, it is decidedly stimulating, and in particular chapters 4, 7, 8 and the appendix to Part 3 deserve to be widely read. R. C. O. MATTHEWS.

Readings in Fiscal Policy. Selected by a Committee of the American Economic Association. Allen & Unwin. 1955. x + 596 pp. 30s.

This is the seventh *Readings* in the series which has now established a firm position for itself. In this volume the student of fiscal and monetary subjects can find 34 articles and—a new departure this—extracts from books which are frequently inaccessible in the original, plus a bibliography running to some 37 pages of small type. Apart from an introductory survey, the articles are divided into five sections dealing with the relationship of fiscal policy to recovery, inflation, the national debt, stability and economic growth respectively, while a sixth section deals with the burdens of the budget and the national debt. Among the authors are Keynes, Schumpeter, Hansen and Myrdal.

Faced with a volume covering such a vast range and boasting so impressive a list of authors, it may seem churlish to qualify one's gratitude for what will undoubtedly be a godsend to the student and teacher despairingly facing complete submersion under the enormous flood of literature on these subjects. Nevertheless, I suspect that this volume will be somewhat less useful than it might have been and than its predecessors have been. It must be immensely difficult, of course, to decide what should be included in and what excluded from a book of this sort; yet, making all due allowance for this, one cannot help feeling a certain uneasiness over a few of the selections. For example, a minimum requirement should surely be that normally an article to be included should have been published long enough for its permanent value to have been established; yet here we have a book which must have gone to the printers early in 1955 and which includes two articles published in 1954! Again, one is struck by the inclusion of several articles of rather dubious relevance (although their intrinsic quality is beyond question) but the complete absence of extracts from the extraordinarily informative and authoritative *Monetary Policy and the Management of the Public Debt* (U.S. Government Printing Office, 1952). Indeed, even the bibliography contains nothing more than a very oblique reference to this important publication.

For the reader on this side of the Atlantic, a prevailing impression will also be that this is fiscal policy with a strong American accent. Keynes is the only British writer represented, and his two brief contributions—Open Letter to President Roosevelt, and Chapter II of *How to Pay for the War* (the publication date of the latter being twice given incorrectly)—were obviously included more out of piety than because of their strict relevance or permanent value. Apart from Myrdal and Haavelmo, every other contributor is strictly transatlantic. Admittedly, the American journals have devoted far more space to these matters than those of other English-speaking countries (and there are so many more of them), but one doubts if the proportionate contribution is quite of the order suggested by a ratio of 516 pages to 39. The selectors, for example, could have done a lot worse than look at the 1948 Budget speech of the late Sir Stafford Cripps; I know of no more lucid or rigorous analysis of the rôle of fiscal policy in the maintenance of stability.

All this seems very querulous and uncharitable, and should not be allowed to obscure the fact that the compilers of this volume deserve our thanks for bringing together between two covers a great deal of material of permanent value and interest. I suppose the truth of the matter is that the earlier volumes in the series attained such a high standard that one is inclined to be impossibly perfectionist in examining the newcomers. EDWARD NEVIN.

Capital and its Structure. By L. M. LACHMANN. G. Bell & Sons, Ltd., for the London School of Economics. 1956. ix + 130 pp. 15s.

There are two processes that go hand-in-hand in the advancement of economic theory; one is that of abstraction and simplification—model-formation in order to exhibit the process of equilibration in manageable manner; the other the process of destroying the simplified models by the discovery of essential and important elements in real processes that have been assumed away or overlooked in the models. In the realm of capital theory, manageable theories involve such extreme simplification, e.g. that all capital is homogeneous, that it is an easy task to make any theoretical structure look ridiculous, and it can reasonably be maintained that the work of destroying theories of capital is of equal importance with that of erecting new ones. Professor Lachmann's book is mainly concerned with making theories of capital look ridiculous, and is to be judged mainly in the light of whether the stress he gives to what simplifying assumptions are inadmissible is correct.

No doubt to make the extreme homogeneity assumption, occasionally permissible for consumption, is, when it is made for capital, to assume away completely the subject-matter of our theorising, and a theory of capital must recognise heterogeneity not merely in the sense in which consumption is heterogeneous but also in a special sense implied by the statement that capital necessarily has a structure. Professor Lachmann has performed a useful service in showing how misleading are all those attempts to get significant generalizations in the field of capital theory without explicit utilization of the structural dimension. He also has much to say that is illuminating when he follows up the clues provided by this standpoint. The stark realism in Professor Lachmann's approach gives a complexity to his notion of structure that makes it bear little resemblance to the structure of the " period of production " concept, and it is therefore not surprising that he is somewhat critical of Böhm-Bawerk as well as of Keynes. For Professor Lachmann, capital is not merely the present form of given consumption at a given future date, as in Böhm-Bawerk's simple model, but a mass of potentialities to be complementary with other capitals in some plans, substitutable in other plans, for all kinds of outputs. The notion of capital as in any sense a quantity of future consumption, has, it seems, to be completely abandoned.

This little book deserves a wide reading, if only to keep theorists on the rails and as an excellent prelude to a theory of capital. It is, however, a little disappointing if we hoped to find a substitute for theories *simpliciter* such as that of Böhm-Bawerk and his successors.

W. E. ARMSTRONG.

Economics and Liberalism. By O. H. TAYLOR. Harvard University Press. Oxford University Press. 1955. 321 pp. 40s.

The author of these reprinted essays himself best indicates their scope: " . . . my strongest interests have been always . . . in the search for the broadest and deepest intellectual foundations on which to build my overall economic, social, moral and political philosophy. . . ." Within this wider context we are offered discussions of problems in economic policy, the history of economic thought, economics and sociology.

Mr. Taylor holds that the principles of liberalism and of liberal economic policy must be derived from ulterior philosophic principles. As he shows, this was true of the Physiocratic and, albeit in a different way, the Smithian economic philosophies. They combined and fused " . . . the idea of Nature's precepts to individuals with the idea of scientific social laws ", and *their* liberalism, therefore, " . . . never was the crude endorsement of an amoral . . . absolute individualism. . . ." This interpretation seems now, at last, generally accepted. While Mr. Taylor insists repeatedly that the Physiocrats and Smith greatly underestimated the scale of government intervention necessary to safeguard the common welfare, he is much in sympathy with their philosophic approach, i.e. the fusion of moral and social scientific law in a " . . . well balanced and entirely coherent synthesis " (" Philosophies and Economic Theories in Modern Occidental Culture "). He complains that the present " new " liberalism lacks this vision and " . . . tends generally in the direction of pure pragmatism ", for without it " . . . liberalism is bound to go on disintegrating . . . " (" Liberal Education and Liberalism ").

Whether the search for the foundations of liberalism is vital cannot be discussed here. But it seems most unlikely that the sort of synthesis devoutly wished by Mr. Taylor should ever yield specific, useful recommendations on economic policy; it either tends to degenerate into dogmatism (against which the author himself warns) or to be so general as to be compatible with a wide variety of policy measures. This, no doubt, in part explains Mr. Taylor's " zig-zag route " in this book. His own discussions of policy matters, though displaying a conservative leaning, are concerned with such broad judgements that even agreement on them leaves almost unlimited scope for disagreement on specific policies. For instance, in a review of *Economic Progress and Social Security* he chides Professor A. G. B. Fisher for refusing to acknowledge that the desire for security, and the maintenance of existing ways of life, is a legitimate end of which policy must take account; and Professor J. Jewkes for failing to perceive, in his *Ordeal by Planning*, that freedom is not the only value relevant in judging economic policies. One may readily agree; but this is barely the beginning of the discussion.

These are essays by a humane, learned scholar, " . . . a perpetually troubled, mind-changing moralist . . .", whose vision has not been cramped by this age of specialism. But the search for a coherent synthesis, given the complexity of the issues, appears illusory. Economic policies for a free society are best served, not by synthetic philosophies, but by sound empiricism, by the method of formulating policy Mr. Taylor himself suggests in his essay on " The Economics of a Free Society".

KURT KLAPPHOLZ.

The Terms of Trade. A European Case Study. By C. P. KINDLEBERGER. John Wiley & Sons Inc., New York. Chapman & Hall Ltd. 1956. xx + 382 pp. 72s.

In his preface Professor Kindleberger tells us that, because of the frustrating nature of the statistical data, this, his first empirical study of monograph length, may well be his last: in his concluding chapter he regrets that " nothing has been proved and little disproved ". The reader might therefore be forgiven if he discounts the intervening twelve chapters and 300-odd pages. Nevertheless this would be doing much less than justice to this massive work.

It must be recognised at the outset that Professor Kindleberger has set himself a formidable task. It is nothing less than the empirical testing of almost everything that has been said about the terms of trade. Many views have been advanced concerning the interaction between the terms of trade, on the one hand, and such factors as appreciation or depreciation of exchange rates, foreign lending, the business cycle, migration, etc., on the other.

These views are confronted by a mass of statistical data relating to Industrial Europe (i.e. the U.K., Germany, France, Italy, Netherlands, Belgium, Sweden and Switzerland) for the period 1870-1952. Unfortunately, the exercise permits only negative conclusions. Indeed it seems that Professor Kindleberger allows himself only one positive statement: " Graham's view that the terms of trade do not change in the short run does not gain support ". They do change, but we cannot generalise how. What happens to them in response to a given action varies from country to country, and, from time to time, depending on the particular elasticities.

Nor does he find much evidence to show that long-run demand factors, such as population growth, have clear-cut effects on the terms of trade; and " the effect of supply in the long run is a matter of luck and flexibility " (i.e. of resources). He believes there is something in the arguments which maintain that the terms of trade move in favour of developed countries and against undeveloped, but nothing in those which suggest a long-term favourable trend for primary products against manufactures. And he will have nothing to do with forecasting long-term trends, so fashionable among contemporary economists concerned with growth.

British readers will be interested in a tentative hypothesis put forward by the author, namely, that when economic activity is recovering from a previous low, the U.K. benefits more from the income effect on exports than it loses on the terms of trade. But when full employment is reached the effects of the latter tend to outweigh the former. On the other hand, Professor Kindleberger does not agree that swings in the terms of trade have been of prime importance for the post-war swings in the U.K's balance of trade. He instances Germany: since 1949 swings in the terms of trade have been similar to those of the U.K. yet Germany's balance of trade has continuously improved. But is not the author's own hypothesis relevant here? An adverse shift in the terms of trade can be offset by an expansion of export volume so long as output can be readily expanded or resources easily shifted (e.g. in reconversion from war to peace). Thus from 1946 to 1950 the U.K. also managed to improve its trade balance when the terms of trade moved unfavourably. But given a normal (i.e. peacetime) distribution of resources and full employment (which we should also regard as normal), the terms of trade became important.

Professor Kindleberger's book is not light reading and perhaps few people will read it from cover to cover. But it is an invaluable source of reference both to the literature on the subject as well as to much relevant statistical material.

G. W. MAYNARD.

Natural Resources: *The Economics of Conservation.* By ANTHONY SCOTT. University of Toronto Press. 1955. ix + 184 pp. 26s.

This book exemplifies a point recently argued by Boulding, that the simplest propositions of economics are often the most important to remember in discussing public policy. Not that Dr. Scott's study of the economics of conservation is elementary—he combines a thorough understanding of capital theory with a very wide reading in the literature of natural resources—but by keeping his eye firmly on the nature of resources as social capital, the need for weighing benefits against costs, and the economic functions of the market, he strips the arguments of the conservationists down to the economic nonsense they mostly are. Indeed, the task is almost too easy, and after the gleeful initial assault most of the book is concerned with detailed theoretical investigation of the effects of various market imperfections and taxation systems on resource utilization.

The book is divided into three parts. The first part begins with a lucid sketch of the theory of capital and production for the firm and the economy as it applies to natural resources, which sets the guiding principles of the rest of the book. Conservation is then defined as " a public policy which seeks to increase future usable supplies of a natural resource by present action ", and the history and practice of conservation is described briefly in a survey which stresses the nationalist and anti-trust motives which (along with social cost and future welfare considerations) have motivated the movement. Part II examines economic arguments for conservation: divergence of private and social costs and benefits (which are described in terms of " non-specificity " of the resources) including defence needs (where the problem arises from anti-profiteering policies) and employment policy (where conservation is only one alternative); imperfections of competition, where it is shown that risk provides no argument for conservation, and monopoly tends to be conservationist, ignorance alone providing a case; and divergence of market interest rates from the " social rate of interest ", which is shown, in a rather difficult chapter, to provide no rationale for conservation. The case for conservation basically boils down to the prevalence of small-scale operators in resource exploitation; the difficulties of formulating effective policy to deal with this are discussed in the final chapter of the section. Part III is concerned with various aspects of the kind of policy that is practicable, discussing in turn the alternative methods of socialization, regulation and " liaison ", the problems of modifying resource tenure to reduce the anti-social results of temporal and spatial " non-specificity ", and the effects of various systems of taxation on the time and quality patterns of resource utilization. This last chapter might have benefited by a more explicit examination of the criteria of an optimum conservation policy: for example, if it is reasonable to assume that " tomorrow will do things better or differently than we do " (p. 82), taxes which bias entrepreneurs against exploitation of low-grade resources may not be so reprehensible.

It remains to add that the theoretical arguments are illustrated by extensive but well-handled empirical analysis of different natural resources. Dr. Scott is noticeably more interested in forests and fishings than in soil resources, and might perhaps have devoted relatively more space to land reclamation and irrigation than he does; he might also have relied less on quotations from, as against summaries of, the literature. But his efforts to reduce a vast mass of material to order have obviously been immense, and on the whole successful.

HARRY G. JOHNSON.

Measuring Business Changes. By RICHARD M. SNYDER. John Wiley & Sons, New York. Chapman & Hall. 1955. xviii + 382 pp. 64s.

The scope of Mr. Snyder's book is indicated by his sub-title: *A Handbook of Significant Business Indicators*. It is necessary, however, to say that his indicators are all for the United States and that they apply to business in a very broad sense. He naturally includes banking and finance, stock market data, commodity prices, output, sales, orders and stocks, together with an important section on construction activity and costs. But he also deals with population and manpower, with income distributions and with national income accounting. On the other hand, he has only a few pages on imports and exports and nothing on the balance of payments—something which couldn't happen here in any corresponding account of British economic statistics.

Mr. Snyder has laid out his text very systematically, giving for each indicator first a general description (with indications of where current and past data are to be got) and then a more technical account of the present composition and past revisions of the figures. The result is a useful compilation, certainly for the American reader, rather less so for outsiders. But, in some ways, his performance is rather disappointing and the book as a whole does not quite come up to initial expectations. His references are confusing, at least to those not familiar with American statistics and American technical jargon. Where we really need a clear exposition of a complicated matter (e.g. how allowance is made for stock splits, rights issues and so forth in indexes of stock prices), we find that he doesn't settle the issue and that we are still left in doubt.

It is interesting to have Mr. Snyder's comments on those indicators which are to be expected to " lead " business cycle turning points. He bases his observations mainly on the work of the National Bureau of Economic Research in analysing business cycles up to 1938. Among the eight " leading " statistical indicators selected by N.B.E.R. are the Dow-Jones stock-price index for 30 industrials (leading by six months), average hours worked per week (leading by three months), two of the F. W. Dodge Corporation's series on floor space in construction contracts (one being residential, the other commercial and industrial), and new orders in the durable goods industries. Among the new post-war statistics, the most valuable in these and other respects is the S.E.C./Department of Commerce series on forecast and actual capital outlay. A fascinating table is given (p. 233) showing how successive forecasts and estimates of plant and equipment expenditures tally in the period 1948–53.

It is equally interesting to see how British economic statistics compare with the American indicators described by Mr. Snyder. We are clearly still behind, though catching up fast, in providing data on consumer credit, on orders and stocks, on capital goods and building costs, on capital expenditures and building contracts. The comparison, however, is not always against us. I prefer our index of industrial production to the U.S. Federal Reserve index based largely (as to 45 per cent.) on " adjusted man-hours ". I prefer our system of wholesale-price index numbers to the extraordinarily cumbersome U.S. compilation in which 1845 commodity price series are grouped into an all-purpose index. I also regard our data on employment and wages as superior to the American, though our Ministry of Labour might well adopt the " shuttle " type of schedule (p. 64) of the Bureau of Labor Statistics.

The American compilations of long-run series, inevitably impressionistic as they are, have fully repaid all the work that has been expended on them. We have only to look at five charts reproduced by Mr. Snyder, on gross national product (in real and money terms, from 1909), on wholesale prices (from 1750), on industrial production (from 1860), on housing " starts " (from 1889) and on stock-market prices (from 1871). These are drawn (except for wholesale prices) on a ratio scale. It is instructive to note how little upward long-run trend there has been in wholesale prices, and then to compare the slightly damped (exponential) growth in industrial production with the increasing (exponential) growth in stock prices. It is also of some comfort to see that, whereas stock prices in 1929 were nearly 150 per cent. above trend, they were only about 50 per cent. above trend in 1954.

R. G. D. ALLEN.

Statistical Inference. By HELEN M. WALKER and JOSEPH LEV. Henry Holt & Co., New York. 1953. pp. xi + 510.

This book is one of a growing number of textbooks which are designed to remedy a state of affairs in which the instruction of non-specialist students of statistics was limited to a treatment of indices used to describe observations. All too often such students learned the computational routines for calculating averages and measures of dispersion, and possibly the product moment coefficient of correlation (routines which they forgot immediately after leaving the examination room), and remained completely unaware of the wider principles of statistical inference.

In this text, computational routines are described, but the main emphasis is laid on a discussion of principles. The authors begin by introducing the concept of the level of significance intuitively, illustrating their treatment by a variant of Fisher's " cup of tea " experiment. They proceed by giving a slightly more formal treatment of probability and then describe the usual tests of significance, based on the binomial, normal, χ^2 t and F distributions. The treatment of these tests is careful and leisurely and the authors introduce such concepts as confidence intervals, Type I and Type II errors, and power functions of significance tests considerably earlier than is usually done. About 40% of the book is devoted to these topics, the remainder deals with correlation, regression, the analysis of variance and covariance, the use of order statistics, transformations and a chapter on non-parametric methods.

The first part of the book is a model of its kind. The authors endeavour to explain the rationale of each method, in so far as it is possible for a non-mathematical reader. They make extensive use of fairly complicated mathematical notation, which will probably have the effect of making the text look more difficult than it is, and it is possible that they underestimate the resistance of the mathematically untrained person to this very convenient shorthand. But, provided he is prepared to take the initial trouble to master the notation, the reader should have little difficulty.

The treatment is more condensed in the second part of the book, which would, I think, present considerable difficulty to the inexperienced beginner. Towards the end, indeed, some of the text reads as if it were merely an expanded set of lecturers' notes. The examples, throughout, are taken from the social sciences, with special reference to education.

Inevitably, there will be disagreement about the selection of subject matter. I would have preferred some expansion in the space devoted to sampling design, at the expense of the more complex forms of the analysis of variance. But this is a matter of individual preference. The book as a whole can be widely recommended as a text.

E. GREBENIK.

The Evolution of Wage Structure. By Lloyd G. Reynolds and Cynthia H. Taft, with a section by Robert M. Macdonald. Yale University Press. London: Cumberlege. 1956. pp. xii + 398. 40s.

Professor Reynolds and Miss Taft begin their book by reminding us that the study of relative wage rates, or " wage structure ", which used to be regarded as the proper province of wage theory, has been largely lost sight of in recent years, since general economists have been concerned with Keynesian wage problems, while labour economists have tended to be institutional in their outlook. With the attitude that wage structure is " a natural meeting ground for labour economists and general economists ", they set out to bring the usual tools of general economic analysis to bear on the information and ideas on wages provided by labour economists. British readers may feel somewhat surprised at the marked dichotomy between labour and general economists which this attitude implies, though it is real enough to Americans. However, it will be generally acknowledged that the authors of this book have made a substantial advance in the study of relative wage rates, by successfully steering a middle course between a theoretical account of the determination of wage differentials, which ignores the awkward complications of the actual labour market, particularly the complication of collective bargaining, and a simple recital of factual data without the spark of theoretical analysis.

Two lengthy sections provide the raw material for generalisations. The first of these describes the evolution of the wage structure of a number of American industries, while the second traces the movements of the more important differentials, occupational, regional, etc., in Sweden, France, Britain, Canada and the U.S.A. Both are in themselves excellent surveys—the most useful review of the facts of wage differentials to be found within the covers of a single book. The chapters dealing with the U.S.A. are, as is usual in American books, adequately supported in their statements by numerous authorities. It is probably the lack of such copious documentation of British wages which leads to one or two ideas which strike an unfamiliar note in the chapter on British wages. The most notable example of this is the contention, several times repeated, that wages in the U.K. are less frequently adjusted than in the U.S.A. To the extent that U.K. agreements do not normally have an annual termination date while many U.S. agreements do, there is probably formal truth in this statement. But in practice the annual round of wage demands and increases has become so usual in Britain that it seems absurd to suggest less regular pressure here than in the U.S.A. Another example of the writers' lack of instinctive awareness of the magnitude of factors influencing British wages is their failure to give due weight to the intricacies of overtime as a factor in separating out workers' earnings.

The movements of relative wage rates in the different industries and countries studied have a similarity which is much too close to be merely accidental. The authors feel that it should in consequence be possible " to develop a general theory of relative wage rates which will have descriptive value for a wide variety of national economies ". In practice, however, the explanations offered for the movements of each differential studied, while they are general in the sense that the same explanation holds good by and large for each case, do not appear to amount to a complete new theory of differentials. The advance in this book is not in the development of a new theory, but rather its successful manipulation of theoretical concepts applied to a larger range of factors than has generally been taken into account in the study of relative wage rates. This seems fortunate: for what we need in this field is not new concepts but more understanding and more information.

At one point the authors' judgement of the influence of unionisation and collective bargaining is that it has produced a " more orderly and defensible wage structure ". The implication is that a labour market in which prices are controlled by collective bargaining is more likely to approximate to an equilibrium position than a less organised one. It is difficult to reconcile this attitude with their seeming approval of the way in which the less well controlled earnings structure can be responsive to market forces and move differentials at variance with collective agreements. It is perhaps significant that their most outright approval of the former attitude occurs when they are dealing with the U.S.A.; and that in later sections, having described other countries' experience, they tend to modify their position considerably. Undoubtedly, the initial effect of unionisation on wage structure is to remove anomalies and tighten up the structure, and this would appear to be the stage at present reached in the U.S.A. What seems less certain is that a developed collective bargaining network has sufficient flexibility or freshness to keep pace with market forces. Hence, at the present stage of development of wage structure in this country, earnings can be more realistic indicators of market forces than wage rates.

D. J. ROBERTSON.

The Enforcement of English Apprenticeship 1563–1642. By M. G. DAVIES. Harvard: University Press. London: Cumberlege. 1956. pp. x + 319. 48s.

When inflation threatened established social relationships in the mid-14th century, the government fixed maximum prices and wages and instituted special courts for their enforcement. In 1909 the late Bertha Putnam set herself the task of finding out whether the 1351 Statute, in which these arrangements were framed, had ever had any practical effect. She found that the Statute had been energetically and successfully invoked for many years, though to little general effect. Two centuries later, in 1563, another government, faced with social tensions arising from another economic crisis, resorted to the Statute of Artificers, in an attempt to regulate the contract of service for all hired labour, provide for wage-assessments by J.P.s, and enforce a seven-year apprenticeship. Dr. Gay Davies has addressed herself to the task of finding out whether the last of these provisions of the 1563 Statute was effectual, and, if so, by whom it was enforced. She has deliberately confined herself to the county, on the ground that the history of regulation in corporate towns is well known from such work as that of Dunlop and Denman.

It should be said, at once, that Dr. Davies' study can stand, without disparagement, beside the great pioneering achievement of Bertha Putnam, and that the immense debt we owe to American scholars for work on the practical consequences of this type of social legislation has thereby become immensely greater.

Taking the legal records, both central and local, relating to fifteen counties, and representing the textile interests of the south-west and of the north, the agricultural and metal-working interests of the Midlands, and the industrial and commercial interests of the east, Dr. Davies has found that 95 per cent. of the extant apprenticeship cases were brought by private persons, that professional informers accounted for the bulk of these, and that the vast majority of all cases, whether brought by private persons or by public bodies, were inconclusive, though not necessarily therefore without deterrent effect. The reasons for this inconclusiveness are legion, the most likely being that the suits lapsed or that the parties settled out of court.

In preparing this formidably documented treatise, Dr. Davies has been obliged to examine, in detail, the law relating to informing, as well as to consider the fortunes and methods of the professional informer himself, endorsing Dr. Elton's conclusions that his profits were small. In addition, there are chapters on the machinery of local enforcement by public bodies, and two suggestive, though very tentative, chapters in which Dr. Davies tries to relate the cases she has uncovered to what is known of such matters as the location of industry and the fluctuations of trade, touching lightly, from her special point of view, on such unworked problems as the expansion of the shop-keeping class that seems to have begun as her period draws to a close.

A. R. BRIDBURY.

Social Security and Public Policy. By EVELINE M. BURNS. McGraw Hill Publishing Co. Ltd. 1956. xvi + 291 pp. 41s. 6d.

Dr. Burns is the doyen of American experts in the field of social security and in this book she turns from the detailed study of a particular programme to an analysis of the problems, social, economic and administrative, that all programmes must face. *Mutatis mutandis*, the difference between this book and her study of *The American Social Security System* resembles that between the Webbs' *Industrial Democracy* and *Trade Unionism.*

Social Security is an odd term if one begins to analyse it semantically, since what in fact is being provided is economic security by certain social instruments, and the author is careful to make clear at the start both the extent of the general field and of the particular section of it with which she is to deal. Measures taken by organised communities to provide economic security for their members may take various forms, grouped by Dr. Burns under four heads. (The labels are the reviewer's and might not be accepted by the author; indeed, they are not uniquely applicable.) These are, preventive measures to avert the loss of economic livelihood by securing health or full employment, protective measures, as tariffs or minimum wage laws, stabilizers such as savings banks or credit unions and palliatives, such as poor relief and the various institutions of social insurance that have sprung from it, together with subsidies to certain costs, such as, for example, of ill-health, housing, education and death. It is with this last group, or rather with that part of it definable as social insurance and allied services, that this book is concerned.

It is divided into four main sections, corresponding to four main problems, which can best be given in the author's own words. (p. 14).

> " Decisions have to be made as to (1) the nature of the protection to be afforded and the conditions to be satisfied for its receipt; (2) the specific risks to interruption of income for which public responsibility will be accepted; (3) the financial arrangements to be made [types of taxes to be selected, division of responsibility between central and local government, distribution of costs over time, etc.]; (4) the allocation of administrative responsibility between private organizations and

> government and between different levels of government and the determination of convenient administrative structural organizations at any given governmental level."

The discussion is carried on mainly against the background of the American system, but by no means exclusively, for there are numerous references to Great Britain and the Dominions, France, Sweden, and other countries. The result is an exhaustive and penetrating study of general principles and problems to which it is not easy to do justice in a short review. At first glance it might appear that certain questions most interesting to a British reader had been omitted, e.g. the effects of inflation or of a full employment policy or the respective characteristics of a comprehensive and a discrete system of social insurance. But this is not the case; they are all there, somewhere, but the argument has often to be assembled from different parts of the book, because the book has been organised in the way it has and not in some other way. Moreover, the reader will have to make up his own mind about the solution to these problems and of others more specifically discussed. For it is practically impossible to discover what are the author's opinions on any of the matters herein treated (is this the hall-mark, after all, of the good teacher?) for she gives the rival points of view with complete fairness, and then passes on. The wonder is that a study so almost morbidly non-partisan is not in the least dull. But no point is laboured over long, the style is (generally) easy and though I have myself an almost morbid distaste for footnotes (of which there are an enormous number) I found them genuinely helpful when I wanted to look at them and easy to skip when I did not. There is no aspect of social security that the author does not illuminate, and many of her conclusions we, in this country, might well ponder at the present time. These include the important point that no system should ever be regarded as immutable, since systems of social security are moulded at their inception by many factors, both social and economic, that may afterwards change.

E. M. HUGH-JONES.

A Statistical Study of Livestock Production and Marketing. Cowles Commission Monograph No. 15. By C. HILDRETH and F. G. JARRETT. John Wiley & Sons Inc., New York. Chapman & Hall Ltd. 1955. xiii + 156 pp. 36s.

This is a highly specialised study in econometric method. Its primary purpose was "to try various methods, recent and traditional, of problem formulation and statistical analysis in an important and promising practical setting". The main emphasis is on the construction of aggregative economic models of the agricultural (livestock) sector of the United States economy, and on the estimation and discussion of particular parametric forms of these models. Application of the results to policy-making was not an immediate aim of the study. This is a pity, since it means that the authors confine their comments on possible applications to one page of the introductory chapter and a final, rather sketchy, chapter on prediction tests.

Apart from this, the book reports a first-class piece of research on a rather complex subject. The first two chapters deal with the construction of the model, and could well stand on their own as introductory reading for anyone interested in the economic significance of the difference between classical regression analysis and the simultaneous equations approach as methods of estimating economic relations. The third chapter gives a full—almost too full—description of the series required by the models, dealing in detail with the statistical and economic problems of aggregation and index-number construction involved. The rest of the book is taken up with the specification, estimation, and, in the light of appropriate tests, discussion of the results of various algebraic forms of the models. The relations studied fall into three groups: production relations, farm decision relations (i.e. producers' demand and supply functions), and demand relations. After a preliminary chapter which discusses, with some results, estimation both by least squares and by the limited-information method, each group is discussed in detail. There are a few implausible results (fully discussed by the authors), which, among other things, pinpoint the critical rôle of expectations.

From the methodological point of view, perhaps the most important aspect of the study is the comparison between least squares and limited information estimates. In discussing the outcome of this comparison, however, the book tends to be disappointing. Differences between the estimates are, in general, not very large relative to sampling error, but, as the authors point out, they are large enough to have important consequences in application. The question thus arises: how is the policy-maker to decide between the two sets of estimates, given their respective characteristics ? There is probably no easy answer, but in failing to discuss it specifically, the authors seem to have missed an opportunity in an otherwise remarkably clear and well planned report.

H. C. MACKENZIE.

Thomas Hodgskin. By ELIE HALEVY. Edited in Translation with an Introduction by A. J. TAYLOR. Ernest Benn Limited. 1956. vii + 197 pp. 18s.

Mr. A. J. Taylor has excellently carried out his excellent idea of translating, editing and introducing Halévy's study of Thomas Hodgskin. Written immediately after, and as a kind of appendix to, *La Formation du Radicalisme Philosophique*, this work gives an austere presentation of the development of Hodgskin's political, legal and economic ideas in three chapters headed simply " 1787-1823 ", " 1823-1832 ", and " 1832-1869 ". Here Hodgskin is allowed to speak—often none too coherently—for himself, with the minimum of comment or interpretation from Halévy. In the fourth and final chapter Halévy sums up Hodgskin's position in the history of ideas and in particular his connections with Marx and Herbert Spencer.

Hodgskin was a kind of nineteenth-century autodidact-polymath-reformer —(John Rae was another)—the ambitious comprehensiveness of whose work is admirable to contemplate. Economics, as Halévy points out, was rather a side-issue for him, the philosophy of law being his central interest. Hodgskin shoots off one sweeping but rather nebulous generalisation after another, moved obviously by deep feelings about the social problems of his and all other times, but not apparently directed by much logical or empirical compulsion. But, of course, one or two of Hodgskin's shafts were picked up by Marx, notably the suggestion of a theory of surplus value founded on the classical or Smithian treatment of labour and value, also the much vaguer suggestion of a " class " interpretation of history and the idea that the land-owning and capitalist class, in the distant past, appropriated all the property of the community and has ever since run the government to maintain this appropriation intact. Also to be found in Hodgskin is the Utopian anarchist strain in Marx, to the effect that after some single great final convulsion the state can and will " wither away " amid vistas of everlasting anarchic classless bliss.

Hodgskin, apparently a part-founder of Birkbeck College, and for many years an anonymous pillar of *The Economist* under Wilson, in one of its especially *laissez-faire* phases, has been pigeon-holed for posterity as a " Ricardian Socialist ". This description, which seems well calculated to make him revolve rapidly in his grave, apparently originated in a reference to him by that genuine " Ricardian Socialist " Marx (in his *Poverty of Philosophy*, as " a socialist " who had " proposed the equalitarian application of the Ricardian theory ". In fact, Hodgskin was a follower of Smith who could hardly have been further from Marx on fundamentals and could hardly have criticised Ricardo's *Principles* more pungently: " I think I never saw a book more destitute of facts than Mr. R.'s, which at the same time, has had so much weight. To me it appears to rest entirely on arbitrary definitions and strange assumptions . . . and to have little more merit than a ' bewildering subtlety ' " (p. 77-8). As regards his " socialism", Hodgskin only criticised the existing distribution of private property, in order the more fundamentally to defend the principle of its natural necessity. Hodgskin would probably be relieved to learn that he has now been, almost officially, adjudicated " not a socialist " by Professor G. D. H. Cole. His almost anarchistic suspiciousness of the legislator comes out in some extreme though suggestive criticisms of the Utilitarian rejection of natural rights (and in particular of James Mill): " Messrs. Bentham and Mill, both being eager to exercise the power of legislation, represent it as a beneficent deity. . . . They lift legislation beyond our reach and secure it from censure. Man, having naturally no rights, may be experimented on, imprisoned, expatriated or even exterminated, as the legislator pleases. . . . Filmer's doctrine of the divine right of kings was rational benevolence, compared to the monstrous assertion that ' all right is factitious, and only exists by the will of the law-maker ' (Quoted from Mill's article on Jurisprudence: *Supp. to Ency. Brit.*, p. 15) ".

T. W. HUTCHISON.

The Poverty of Philosophy. By KARL MARX. Foreign Languages Publishing House, Moscow. Lawrence & Wishart Ltd. 1956. 256 pp. 3s.

Marx's attack on Proudhon's *Système des Contradictions Économiques ou Philosophie de la Misère* was first published in French in 1847. There is a good deal of rather turgid logomachy about " value " but also several interesting details illustrative of the genesis of the Marxian System. Of these, what may perhaps seem one of the more curious is Marx's stern correction of Proudhon for having in his treatment of value " simply forgotten about *demand* " (p. 40). Two later letters dealing with Proudhon, and a speech by Marx " On the Question of Free Trade " (1848) are also included. But the most interesting item in the volume is Engels' Preface of 1884 to the First German Edition, which includes a very lucid and forthright defence of the functions of the competitive price mechanism, and a correspondingly vigorous attack on the labour-money scheme of Rodbertus as a kind of "Utopian" socialism which afforded no solution to the problems of the allocation of resources. With his usual generous modesty *vis-à-vis* his senior partner, Engels suggests (p. 15) that he is simply applying to Rodbertus the criticisms Marx had directed against Proudhon and John Gray (in a passage in the *Critique of Political Economy* printed here as an appendix). In fact, however, the fundamental point about the essential functions of a competitive price mechanism in allocating resources hardly emerges at all in Marx's polemics, whereas Engels' paragraphs (pp. 17–22) might almost have been written by Mises.

This volume is produced in a serviceable but rather ugly format by the Foreign Languages Publishing House, Moscow, and is very remarkably priced at 3s.

T. W. HUTCHISON.

Manchester Merchants and Foreign Trade, Vol. II, *1850-1939*. By A. REDFORD assisted by B. W. CLAPP. Manchester University Press. 1956. xxii + 307 pp. 30s.

It is now more than twenty years since Professor Redford published the first volume of his study of the activities which Manchester merchants pursued through their Chamber of Commerce and its forerunners. That volume has established itself as one of the most illuminating contributions to our understanding of the formation of British commercial policy in the nineteenth century. There will be general satisfaction among economic historians that, despite unforeseen interruptions, Professor Redford has been able to complete the work with a second volume that has the same admirable clarity, balance and good sense as the first. The similarity in style, treatment and quality between two volumes appearing so far apart in time is, indeed, remarkable.

If the second volume seems a little less significant than the first, the difference originates with the Manchester merchants rather than with their historian. After 1860 there is no great central theme like the conversion to free trade ideas and the efforts to have them put into practice, which had so large a place in the first volume. Manchester merchants remained alert to the effects of commercial policy on their interests all over the world and their Chamber of Commerce continued to be an important instrument of pressure on the government. On the debating and settlement of the largest questions, however, they had a less prominent influence than before, mainly because most of them were content to follow already established principles ; they preached no new doctrine because they found no need for it. At first this attitude seemed thoroughly sensible and the records of the late nineteenth century show a level-headed refusal to panic in the face of temporary difficulties while siren voices were calling for ' fair trade ' and monetary reform. But to many readers the twentieth century discussions, which Professor Redford presents objectively without passing judgment on them, will suggest an increasing lack of adaptability, a short-sighted attempt to deal with permanent changes in trading conditions by means of a series of stop-gap expedients. Only in the nineteen-thirties, after the Manchester Chamber had rather suddenly switched to whole-hearted protectionism (which it had come to favour during the First World War and then abandoned), were there signs of greater initiative. Then at last there was explicit recognition that the cotton trade's decline was permanent, and the Chamber took part in attempts to invigorate salesmanship and to secure the establishment and growth of new industries in Lancashire.

The Manchester merchants were no longer acting as pioneers in commercial policy, and the Chamber of Commerce, still (though less completely) dominated by cotton men, was less representative of Manchester's increasingly varied business life. But the discussions and activities recorded in this volume provide a reflexion of many important national changes and make a notable contribution to the history of Manchester. And no book could more happily exemplify the fruitful co-operation of the academic and business communities of a great city.

W. ASHWORTH.

A First Approach to Economics. By E. V. MORGAN. Sir Isaac Pitman & Sons Ltd. 1955. viii + 456 pp. 20s.

At a time when there is certainly no shortage of new textbooks on economics, one naturally wonders how this book differs from its rivals. Apart from the clarity, accuracy and sound judgement which one knows will characterise any of Professor Morgan's writing, one imagines that this particular book must be aimed at that all-too-common phenomenon, the " one book " student. Within 450 pages, there is, first, a brief historical survey of the development of the British economy, second, an analytical description of that economy today and, third, a section covering the whole field of economic analysis.

However, Professor Morgan is quite explicit that his historical section, in particular, is not intended to supersede the recognised textbooks. He carefully treats the historical section not as an end in itself, but as a way of showing how historical influences have moulded the present pattern of our economy. Whether students will heed Professor Morgan's warning, and realise that this section is much too thin to replace the history books, is quite another matter. In this first section, the chapters on Overseas Trade and on Money, Banking and Finance, are perhaps the most stimulating.

The second section of the book is the best, and here again it is the chapters on Finance, both internal and external, which are the most instructive and compelling. Although the other chapters give a clear and balanced analysis of the present-day economy, and are competent enough, one has the impression that this is no more than duty patiently done. But the chapters on financial topics leap to life as Professor Morgan returns to the field of his real interests.

It is the third part of the book which seems least satisfactory. It is rather advanced for the beginner; yet it is also too short for all the inevitable pitfalls and problems of this branch of economics to be thoroughly dealt with. Nor is there any real success in integrating this theoretical part with the history and description that precede it. One or two specific points trouble me here. It seems wrong to discuss both utility theory and indifference curves in an elementary book like this. Beginning students can usually assimilate one or the other, but there is confusion if they try to learn both. The attempt to reconcile these two analyses is surely final year work.

The other thing which troubles me is the discussion of interest (pp. 348–55) which is non-Keynesian. Professor Morgan suggests that the reasoning applied to the rate of interest on bonds applies also to " stocks and shares " (p. 350). This surely encourages the all-too-common howler of students who fail to distinguish (as Keynes himself did so carefully) between the rate of interest on " debt " and the dividend yield on " equities ". Authors are obviously perfectly at liberty to expound whatever theories they wish, but in a chapter where Keynes is mentioned several times, it is surely worth making it clear that in fact the exposition is not Keynesian.

All in all, however, this is a readable book which should both stimulate and instruct the student.

D. C. Hague.

State Regulation of Minimum Wages. By S. B. L. Nigam. Asia Publishing House, Bombay. 1955. pp. 352. Rs. 12-8.

Dr. Nigam devotes Part I of his book to a consideration of the objectives and scope of minimum wage regulation, the methods that have been tried in various parts of the world, and the principles on which, in theory, if not always in practice, minimum wage levels have been decided. This survey provides a most useful comparative account of the working of minimum wage legislation; it also has the merit of being clear and concise as well as comprehensive.

In Part II the author examines briefly the conditions of labour in India, and seeks to relate the experience reviewed in Part I to the problem of finding a remedy for the low wages and exploitation which are the lot of a large section of industrial workers in that country. Dr. Nigam is concerned to establish, by theoretical argument, that minimum wage legislation of an appropriate kind would not only reduce acute poverty, but also raise productive efficiency, if applied in India.

The author believes deeply in minimum wage legislation as a means of advancing social and economic standards in an underdeveloped country, such as India. But he does realise that the economic effects that may follow its introduction may not be always desirable. Dr. Nigam seeks to overcome fears that minimum wage laws might produce unemployment, lower output, higher prices and a redistribution of income from the peasant population to the already better-off industrial workers. The author is firm in his conclusion that minimum wage levels stringently enforced by law would not lead to " a reduction in employment and output or an increase in prices ". On the contrary, he is convinced that the output of workers would rise, since with the higher wages they would be better nourished; therefore, any tendency for higher wages to lead to higher costs and prices would be offset by higher output.

The value of minimum wage legislation has been established under a variety of conditions, as Dr. Nigam shows in the first part of this book. But he is perhaps over-optimistic in his assessment of the net advantages that would accrue to India if it were to adopt his proposals in full. The arguments used to support his opinions are not always entirely convincing, and they might have carried greater weight had they rested on a more thorough discussion of India's economic problems.

B. C. Roberts.

La Formation des Prix : Analyse des Rapports entre la Théorie Économique et la Politique Industrielle. By Jean Pierre de Bodt. De Visscher, Brussels. 1956. viii + 217 pp.

This is the first comprehensive report in French on the full-cost controversy. Professor Bodt himself is an eclectic rather than a partisan; his well considered view being that the so-called full-cost principle of pricing is not an alternative to traditional theory but a practical substitute for it in situations where the schedule of long-run demand is highly uncertain.

It is clear that the author has some personal knowledge of the ways of business, and the passages which are based on his own observations are probably the most valuable parts of the book. But he has not carried out any systematic investigation into the price policies actually pursued by business firms, and, like so many other economists, he has overlooked several important issues. One of these is the meaning of profit maximisation: is it the largest absolute amount of profit, or the highest rate of profit which business men strive to attain? Another is the wide gulf, indicated by recent studies, which appears to exist between what business men say when confronted with leading questions, and what firms actually do in the course of years.

The book is presented in three parts. In Part I the classical and neo-classical theories are confronted with the practice of business firms, and it also includes an introduction to elementary demand and cost theory. Part II is devoted to critical summaries of more recent theories of the firm, and carries cost analysis to a further point. Part III deals with such applied problems as the control of direct cost, the extent and flexibility of the margin added to them, price discrimination and resale price maintenance.

Most of the passages are lucid and instructive, but the exposition is frequently laborious. And Professor Bodt would have been well advised to leave certain analytical concepts alone. He makes most bewildering use of terms like elasticity, and further confusion is revealed by several of his diagrams, e.g., those on p. 168 and p. 197, whose faults could not possibly be attributed to the draughtsman.

André Gabor.

Automation in Theory and Practice. Edited by E. M. Hugh-Jones. Blackwell. 1956. ix + 140 pp. 12s. 6d.

This small book records a course of lectures on " Automation " given in 1956 by various well qualified lecturers, to undergraduates reading economics at Oxford. It is suited to the needs of readers who are not engineering technicians, but who wish to understand what " automation " means, and why so much fuss has been made about its possible social implications.

The term " automation " may be justified as an addition to our vocabulary as an equivalent to " mechanisation " in the sense of including all substitutions of automatic mechanisms for human labour. No useful purpose is served by devising a new term for just those developments that happen to be displacing human labour in the nineteen-fifties. These are examples of " automation " that happen to be of topical interest. The lectures recorded dealt specifically with automatic control, transfer machines, computing machines in the office, and a few associated developments. No doubt in 20 years' time the developments in progress in automation will be quite different ones.

The lecture by Frank G. Woolard entitled " Automation in Engineering Production " gives an account, of interest to economists, of the history of "transfer machines ". Transfer machines are a natural development of " production lines ", and were first used in 1923. The interesting question is why a known and simple type of device, that has gradually made its way into use, with difficulty, over a period of 30 years, should suddenly be hailed as a revolutionary innovation. This question is not adequately answered in this paper, and suggests a useful field for further enquiry.

The main question that everyone must ask about the present spate of "automation" concerns the degree of its importance in our economy. Opinions differ even among the lecturers in this course. Dr. R. H. Macmillan in the lecture "The Scientific Basis" says that "in the end its social influence must surely be as great as that of the industrial revolution", but the Earl of Halsbury, in his interesting and original introduction to the course, points out that only 25 per cent. of our working man-power is engaged in manufacturing processes. Of this fraction only a fractional reduction could conceivably be made by the devices under discussion. The book does little to put into true focus, with the quantitative evidence, how much or how little our social life will be affected by these specific innovations. There is little doubt that enthusiasm and popular journalism have greatly exaggerated their potentialities, and created both alarm and optimism out of proportion to the facts.

The best attempt in the series to put the developments into perspective comes from the trade union side in H. R. Nicholas' paper "The Trade-Union approach to automation". This is a sane and balanced assessment, and a welcome indication that one may hope that the important steps now being taken in the development of productive techniques will be seen in true proportions and wisely used.

The book serves its purpose as a useful introduction to these topics. It does not pretend to be more.

A. TUSTIN.

SHORTER NOTICES

Note sulla Natura Economica e sugli Effetti delle Imposte sul Valore Aggiunto. By FRANCESCO FORTE. Unione Tipografica, Milan. 1955. 30 pp. L. 400.

This is a brief monograph on the subject of "value added" taxation. Its approach is macroeconomic and it is concerned with the possible types of taxes on "net value added" (taking into account definitional problems, such as depreciation, user cost, etc.), with the incidence of such taxes and, finally, with comparing these taxes with such others as general sales taxes and general income taxes.

Studi di Scienza Finanze e Diritto Finanziario. By BENVENUTO GRIZIOTTI. Dott. A. Giuffré, Milan. 1956. Vol. I. xl + 521 pp. Vol. II. viii + 585 pp. L.3000 each volume.

The two volumes contain a selection of articles and monographs on public finance and related matter by Professor Griziotti, the majority of the articles being reprinted from the *Giornale degli Economisti.* The dates of the contributions collected here range from 1908 to 1954.

In the first volume are eleven papers on public finance, collected under four headings; debt conversion, tax systems, public expenditure and (a subject in which Professor Griziotti had a special interest, and of which he had a specialised knowledge) post office finances. The longest contribution, a monograph on the taxation of capital gains and non-wage incomes, runs to 216 pages.

The second volume contains a greater (29 papers) and more assorted collection. In general, it is more "academic", with several studies in the methodology of public finance as a discipline, and studies in the history of (Italian) economic thought in the field of public finance.

There are two prefaces, by Professor Einaudi to the first volume and by Professor Vanoni to the second, and a long and detailed bibliography of Professor Griziotti's many contributions to economics in general and public finance in particular.

L'Italia nell'Economia delle sue Regioni. By FERDINANDO MILONE. Edizioni Scientifiche Einaudi, S.A.S. Turin. 1955. xiii + 1,296 pp.

This beautifully produced volume is the first regional economic geography of Italy to appear between a single pair of covers. Taking each of the thirteen post-war regions of Italy in turn, Professor Milone gives a brief description of the relevant physical and, in some cases, historical features of the region, and then turns to concentrate his attention at length on its economic geography.

Inevitably, in a book of nearly 1,300 pages, the canvas is rather crowded, but the text is illustrated with more than two hundred tables and ninety-seven maps. Most of the tabulated information is as recent as can be expected in a work of this kind (generally for the period 1950-1953), but some of the maps date from before the thirties.

Karl Marx : Selected Writings in Sociology and Social Philosophy. Edited with an introduction and notes by T. B. BOTTOMORE and M. RUBEL. Watts & Co. 1956. xiii + 267 pp. 21s.

This latest addition to the vast literature of Marxism takes the form of a volume of extracts, varying in length from two or three lines up to three or four pages, arranged so as to afford a reasonably concise picture of " the main features of his method, and the main conclusions of his research ". Many of these passages are from the numerous lesser-known writings, several of which have only been first published comparatively recently, and have never before been translated into English. The main emphasis is, of course, on Marx as a " social scientist ". Though the volume does not seem to contain any surprises, at any rate on economic topics, it should be a useful one to those wishing not too laboriously to extend and sharpen their knowledge of Marxism, or to those who want anthology pieces presenting the main Marxian ideas in the master's own words, comparatively briefly but in much of their full complexity. The volume is introduced by two learned essays on Marx's Sociology, and on the influence of his sociological thought.

Tariff Procedures and Trade Barriers. By G. A. ELLIOTT. Toronto University Press. London: Cumberlege. 1955. xiii + 293 pp. 48s.

This is a detailed descriptive study of indirect protection in Canada and the U.S. As the author shows, there are a large variety of trade barriers other than tariffs and quotas—in part the inevitable result of administrative procedure, in part explicitly designed to provide additional protection—which importers have to overcome. These include the complex nature of the tariff structure, the elaborate documentation required, uncertainties of classification and valuation, and the existence of numerous regulations relating to matters like marks of origin, health and sanitation.

Although the investigation is confined to these two countries, the conclusion to be drawn from it is likely to have a much wider validity. Freer trade is not just a matter of reducing tariffs and other obvious trade barriers—that, by itself, may be relatively ineffective, unless steps are taken at the same time to deal with indirect protection in its various guises. We are apt to forget this.

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A Theory of Second-Hand Markets[1]

By Arthur H. Fox

The subject of second-hand markets has received scant attention from economists, either in the theory of consumers' demand, or as a specialised form of capital market. The aim of this study is to examine the nature of second-hand activity in consumers' durable goods. The analysis will suggest that, far from being a kind of economic backwater, second-hand transactions have important effects upon the whole process of production, distribution and consumption, of which they are an integral part. This article presents a simple theoretical model of a market, derives from it certain conclusions about manufacturers' production policies, and discusses finally the effects upon consumers' demand and welfare.

SCOPE AND METHOD OF ANALYSIS

In the eyes of the law the term second-hand may apply as well to a Gainsborough as a garden roller, or even a herd of goats. At first sight it might seem logical to let the economic definition follow this, and survey the whole related fields of the art, antiques, valuables and property markets. Attention has, however, been confined to those markets which accord with the everyday usage of the term "second-hand", for this gives the key to the distinctive unity of the subject within the wider setting. Second-hand goods are inferior goods. Having once been bought new, durable goods are normally subject to physical use which results in a perceptible process of deterioration and in the end wears them out. It follows therefore that the continued availability of used goods in the second-hand market requires a continuing stream of new production feeding the market at the top.

This at once makes it difficult to analyse any market equilibrium situation in terms of stocks, as would be possible if the existing stock were large in relation to its rate of wastage. Naturally the relative importance of flows compared to stocks in determining market prices will vary inversely with the length of life of the individual products in question. In all demand and supply there are always these two aspects present, with one predominating. In this case the two are so nicely balanced that neither can be overlooked. In the long run the conditions of supply of the new product govern market values: in the short run, as wartime experience illustrated most vividly, it is the availability of second-hand stocks already in existence which is of supreme importance. Since we are concerned in the first place with the equilibrium relationships to be found between the new and second-hand sectors of the market, the simplifications on which the analysis is based are designed to focus attention upon the downward flow of goods from production to the scrap-heap. This will not prevent treatment of short-run adjustments to changes in market conditions when these occur.

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[1] I am grateful to Messrs. Aubrey Silberston, W. B. Reddaway, Ralph Turvey, P. J. O'Leary, Basil Yamey, and to my wife, for criticism and discussion of these ideas.

A further problem of exposition is posed by the fact that even from a flow of perfectly homogeneous new products there will develop an infinite variety of second-hand " products ". There is no common denominator such as units of residual service, in terms of which this potential supply may be measured, for it is one of the outstanding characteristics of consumers' durable goods that the utility derived from their ownership is composed of two strands whose proportions vary over time and also from owner to owner. There are on the one hand the physical services rendered—transport, televiewing or typing—and on the other the satisfactions arising merely from pride of ownership, the fact of newness, or reputed price—what in its extremer forms has been termed conspicuous consumption. Specimens of different ages are not perfect or even acceptable substitutes for each other in the eyes of many consumers, and different consumers view these aspects differently.

We are left then with three variables, the price, the numbers and the quality of the objects bought and sold in a given market. In most economic theory the result of such a situation has been that each differentiated product has had to be considered separately as having its own demand curve, subject to that of the other products remaining unchanged. To do this for every condition of second-hand goods would not only be pointless but would ignore the possibilities here afforded by the fact that there are no gaps in the chain of substitutes ; " differentiation of product " is a continuous process rather than a statement of an achieved divergence. The goods form a spectrum along which they are continuously shifting with time, and this makes possible a diagrammatic treatment in which the ages of products can be ranged along one axis.

Although in no case is it permissible to attach cardinal significance to the numbers denoting such quality characteristics, there is a choice either of hours of actual usage, or simply the age of the product, as the units along this scale. In individual cases it is true that usage can override age as a determinant of value, but it is more commonly age which predominates. In connection with this it is worth observing an almost universal dichotomy in the construction of durable goods, between what could be called the " works " and the " structure ".[1] The works wear out and may be repaired or even renewed several times within the lifetime of the structure. The more slowly changing condition of this structure mainly determines the extent to which the repairing process is worth continuing. Thus we shall follow normal market practice and let age deputise for condition, bearing in mind that this is necessarily an omnibus term covering all the attributes of a representative specimen at that age.

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[1] For example, the compressor and cabinet of a refrigerator, the mechanism and frame of a typewriter. Even the binding and the pages of a book show some trace of this.

THE ASSUMPTIONS OF THE ANALYSIS

In order to examine the question of second-hand supply and demand the following simplifying conditions have been assumed.

(1) A single type of durable product is available. There are no substitutes or varieties, and it continues in production in unchanged form. This condition is later modified to allow for annual or periodic change of the model produced.

(2) The product is in perfectly elastic supply at a constant new retail price. Since the great majority of consumers' durable goods are subject to resale price maintenance, this is a reasonably realistic condition.

(3) There are two groups of consumers only : first and second owners. Their attitudes with respect to the commodity in question differ but are homogeneous within the groups. The actual numbers of first owners are in the early stages of the analysis assumed to be constant.

(4) The supply of used goods comes solely from first owners who continue as such by replacing their assets with new ones. Supply from relinquishment of ownership is ignored, i.e. it is assumed that committal to ownership is permanent.[1]

(5) Transactions between the two bodies of users take place directly in a perfect market. All are immediately aware of all opportunities and can accurately assess the condition of the commodities available.[2]

(6) Repair costs for any age are known, and are a continuous and increasing function of age. Repair is in this context intended to involve such maintenance as will keep the running costs and the quality of service (as distinct from pride of ownership), unchanged. Alternatively, to the extent that quality of service declines or running costs increase they may be counted as the equivalent of the repair costs which would have prevented this.

(7) A " normal " amount of use is intended by all purchasers.

(8) Interest rates on the capital involved can be disregarded. Such a consideration is in any case foreign to the vast majority of consumers.

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[1] Relinquishment generally takes place as a result of personal exigencies : law suits, marriage, triplets, illness, bankruptcy and death. Even though this type of supply may prove to be a substantial proportion of the total there seem to be good grounds for believing it to be relatively inelastic to market price. Thus although it may lower the general level of prices, it is unlikely to affect the pattern of depreciation which is affected mainly by replacement conditions.

[2] The imperfections which in fact exist, and their influence upon the complex pattern of market structure, will be considered elsewhere in a later article.

To assume a constant interest rate involves only slight changes in the actual determination of the equilibrium.

(9) Incomes and tastes remain unchanged over the period in question. This is modified later to allow for the annual model-changing mentioned in the first assumption.

Bearing these in mind we may proceed directly to an examination of the conditions under which second-hand supply would be forthcoming.

THE DERIVATION OF SUPPLY AND DEMAND CONDITIONS

The Optimum Age of Replacement

Length of life is the result of an economic decision, although conditioned by physical factors. Be it car, camera, razor blade or gramophone needle, the user may discard according to the degree of deterioration which he is prepared to accept in the services rendered, or to the costs of repair which he is willing to sustain. Capital cost is spread over a greater number of years by postponing replacement, but repair costs are thereby increased.[1] These two items taken together will be termed " holding cost " to distinguish them from the total operating cost including running costs, which being assumed constant are not relevant to the decision about when to replace. For present purposes the combination of these two types of cost is best expressed in terms of the total cost diagram shown in Figure 1.

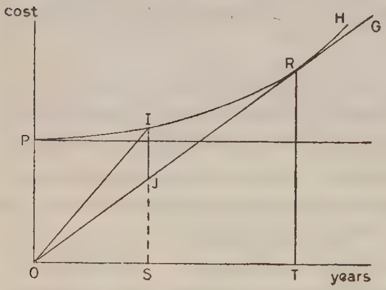

Figure 1

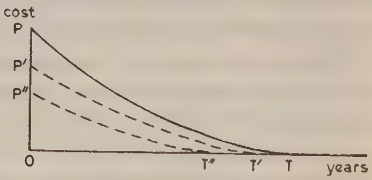

Figure 2

Costs are shown on the vertical axis, and age in years along the horizontal. The initial and replacement price of the new product is shown as P. To this has been added the cumulative total of repair costs, giving the curve PH, which represents the total holding costs incurred by keeping an asset to the ages shown before replacing it. The optimum period of replacement, if no second-hand or scrap value were realisable, would be that where the tangent OG from the origin just touches PH at R, for $\frac{RT}{OT}$ is the minimum average rate at which holding costs can be incurred. To replace regularly after a period OT thus causes the lowest possible charge upon the consumer's income. If, for instance, discard and replacement took place after a period OS, the height of the total cost curve PH gives a value of $\frac{IS,}{OS}$ and this represents a higher rate of holding cost. To discard later than the time shown would similarly incur higher costs than necessary and imply a negative value of the asset.[1]

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[1] This is presented in algebraic terms by Hans Brems : *Product Equilibrium under Monopolistic Competition* (Harvard, 1951), p. 30. His choice of women's stockings as an example avoids the introduction of second-hand dealings into the picture.

We can now inquire what is the sum which would have to be received at any age in order to leave the consumer in no worse financial position than that involved in holding for the optimum length of life. Considering the period OS on the diagram, we can see that the necessary sum is IJ, for the receipt of this would restore the consumer to the line OG, the same rate of holding costs over time as before. The appropriate value for any age is thus given by the distance between the curves PH and OG, and this value can be regarded as potentially the price at which the owner would be prepared to offer his asset on the second-hand market and replace it with a new one.

The Rate of Depreciation

This information is displayed in Figure 2 in a form more suitable for further analysis. The height of the curve PT at any age is identical with the difference between the two curves PH and OG on the left-hand diagram. What it shows in fact is a depreciation curve for an owner to whom the only relevant factors in the situation are the initial price and the money repair costs. It has been seen that replacement at any time on receipt of the values shown would yield the same level of holding cost. The same is equally true if the goods are acquired at any point on the curve PT and held until discard at T.

Exactly similar curves would apply to other potential new prices such as OP′, OP″, etc. If the initial price were lower than OP, this would imply in terms of Figure 1 a lower total holding cost curve P′H, and accordingly a slightly earlier optimum age of discard, and a lower average holding cost over the period OT′. Such possibilities are indicated by further depreciation curves P′T′, P″T″, each corresponding to a hypothetical price for the new asset and the range of second-hand values derived from it. Their basic shape reflects that of the repair cost curve which applies to them all. They form a set of indifference curves showing the combinations of age and price between which an owner could be regarded as indifferent when to part and replace, or a buyer in the second-hand market to acquire in replacement.[1] Whilst it may be true that these are potentially schedules of the terms of which supply might be forthcoming there appears so far no reason—apart from the case of capital shortage—why there should be any transactions, since the conditions which determine demand are identical. All owners incur the same holding cost and may be assumed to purchase a new asset at the head of the range. We need therefore to examine the causes of divergent rates of depreciation, for it is only on account of such divergence that opportunities for exchange are likely to be taken. The depreciation curves so far considered will be used as a frame of reference by which to assess other attitudes.

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[1] In the case where a scrap value for the materials embodied can be obtained the effect is to shift the whole curve PH downward by the amount of the residual value. This will imply a slightly shorter period of replacement, as in effect it lowers by this amount the capital sum to be found on replacement, so that the saving of capital by postponing replacement is less. Otherwise it makes no difference to any of the analysis and can for this reason be disregarded.

Reflection shows that this simple derivation of depreciation rates is not in practice an entirely objective one. What is the cost of repair ? Adam Smith might well have observed that some men are endowed with a propensity to tinker ; such may find it no trouble—even a positive pleasure—to mend a bicycle, while others invariably have it done at a shop. Besides this, many other factors affect the value which an owner is likely to set upon his asset at any stage.

In the first place there is not only the actual cost of repairs, but the opportunity cost of being deprived without notice of the services of the asset while repair takes place. Naturally this affects the doctor more than the pleasure motorist ; and the discounting of this risk is one of the principle causes of the transfer of business or professional users' equipment into less exacting ownership. Secondly, however stalwart the services rendered, many owners dislike owning an old, battered or frayed specimen ; the satisfaction derived from outward appearance is simply reduced. Both these factors would be reflected in an earlier age of discard, and consequently steeper rate of depreciation than that shown by PT. The resultant higher rate of money outlay would reflect the fact that ownership of the product in question is influenced by holding costs additional to those first discussed. Although less tangible, they are capable of a monetary evaluation by the extent to which the new depreciation curve falls short of the original optimum OT. We may still retain the idea that such a curve represents the combinations of age and price between which the owner is indifferent to parting or holding.

In the market for consumers' durable goods the effects just observed are often overshadowed by the far more powerful factor of obsolescence induced by changes in the new product. To incorporate this into the theory requires a modification of the assumption that the form of the product remained unchanged in succeeding years. It was clearly somewhat unrealistic to assume tastes and technology as parameters over a period as long as the life-span of durable goods. Therefore for the remainder of the analysis the following assumption will be made : that a change of model occurs at regular intervals, that it entails no alteration of the retail price, and that it acts with a regularly repeated effect upon that section of the owning population who are sensitive to it.

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[1] Where interest rates are relevant the average capital sum locked up, and hence the interest charge, will be less if ownership is sustained by frequent purchase and replacement at the foot of the range rather than by infrequent purchase at the head. In the extreme case of credit being either simply not available, or very expensive, as in a hire purchase charge, this may in fact cause the individuals concerned to have recourse to the low unit cost available in the second-hand market. This may even involve a higher level of holding costs than if more capital were available.

It is a feature much commented upon that in the later stages of development the technical progress embodied in a change of model is less important than the influence of fashion upon the design of products. Manufacturers tend to concentrate on the far less costly process of deliberate and regular alteration of the outward appearance, in the attempt to induce the now relatively stable number of owners to part earlier than they otherwise might. That this is possible is due partly to the imperfections caused by the technical ignorance of consumers. Its main foundation is, however, its appeal to the love of change and novelty ; ostensibly because it is " progress " but in fact because it satisfies the desire for conspicuous consumption. Whilst perhaps each time there may be a kernel of technological justification for the change, a great part of it could only charitably be described as gadgetry and frills. It is in the readiness of the consumer to spend more income upon ownership than the minimum necessary to obtain the basic service, that we find one of the mainsprings of second-hand activity.[1]

Long-run Supply

Attitudes such as the foregoing may therefore be responsible for the existence amongst first owners of steeper rates of depreciation than those caused by the incidence of repair costs. In Figure 3 the schedule PS, representing our homogeneous body of first owners, is taken to typify such attitudes. It indicates that in the absence of any resale value the assets would be discarded after a period OS.

Although the curves so far drawn represent the conditions upon which an owner will part and replace, they represent only price and quality, which are but two out of the three dimensions of the supply of second-hand goods. We must next consider the number of units forthcoming. In a market in which the number of first owners is constant, equal numbers of new and used goods must in the long run be bought and sold. The actual number will vary inversely with the age to which first owners keep their assets. If N represents the number of first-hand owners, and A the number of years before their possessions are replaced, the annual supply of second-hand goods coming on to the market will be $\frac{N}{A}$, which similarly expresses the rate of new sales by manufacturers. This relationship is shown in the lower half of Figure 3, in which the age of replacement is plotted against the annual supply of units which will be forthcoming at that age, measured as a proportion of the total stock in existence. For example, at a market price of OM

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[1] Particular reference here to consumers' goods does not imply that no counterpart is found in the world of producers' goods ; there is a clear parallel in what is called " prestige value ".

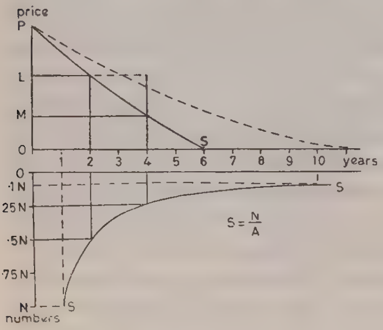

Figure 3

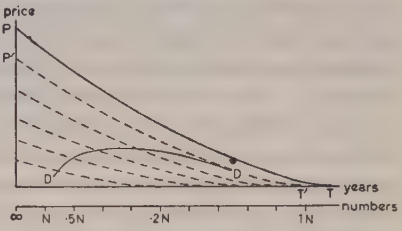

Figure 4

for a four-year old specimen, an annual supply of 0·25N would be available.

If in fact the demand price for a four-year-old unit were higher than this, say at OL, it would follow that owners of younger and better specimens down to two years old would be willing to offer them for sale in competition with the older models, and that they would necessarily prove to be preferable substitutes in the eyes of potential second owners. Thus owing to the ease of substitution between items in this range of superior/inferior goods, the ultimate effect of an increase in demand would not be to raise the prices for the whole range of ages, but to shift supply activity upwards along the spectrum : a supply of O·5N two-year-old units would be available. This movement to the left up the supply schedule increases the supply of used goods in two ways. Firstly, each unit offers more residual service, and secondly greater numbers are available. The converse is true of a diminution of the price obtainable, reaching a lower limit shown as example in the diagram where $\frac{N}{6}$ six year-old units are simply scrapped.

Long-run Demand

As representative of the attitudes of second owners we shall use the original depreciation curves derived from the assumption that holding costs were to be at the minimum compatible with maintaining the basic service from the product. We have already seen that at the level of holding cost corresponding to a new price of OP, there is no reason to believe there would be any second-hand demand anywhere else along the depreciation curve PT except at P itself. Potential second-hand consumers will—with one or two exceptions—only pay prices which yield lower holding costs than those of the new product. Consequently, for each depreciation curve in a set there will be a different number of consumers who are just prepared to sustain ownership on such terms. This number will diminish with each higher curve until it reaches a ceiling, shown as P′T′ in Figure 4, above which demand is either choked off or transferred to the market for new goods.[1] The point P′ at which this curve cuts the vertical axis represents the maximum price which in normal conditions would be paid for an article second-hand but " unused and as new ". The difference between P and P′ is thus a monetary expression of the differentiation in consumers' minds between first-hand and second-hand status as such.

Figure 4 is constructed similarly to Figure 3, except that the third dimension has been condensed into a second scale of numbers corresponding to the age scale. For any age, and hence number of units available per year, there must be a unit price such as would just induce consumers in the second-hand market to demand this supply in replacement of their own holdings. This price will yield a given holding cost to purchasers, and for any given state of demand each price will be the only one on its particular holding cost curve which will clear the market. The unit prices at which younger, and hence larger, numbers of specimens will be demanded will involve successively lower holding cost curves in order to induce more people to become owners ; the price at which older units, and hence a smaller annual flow of them, would be rationed by the market would involve successively higher holding cost curves, approaching as a limit the curve P′T′ at which all demand is choked off. An example of the locus of all such points relating to a given state of demand is shown as the schedule DD. It will be observed that although movement to the left along this curve represents successively lower holding cost curves, it does not to begin with involve a lower unit price. This is because the value of a lesser age at first compensates for the slightly greater numbers. For each one-year decrease in age, however, the number of units available increases at a progressively steeper rate. Thus the demand schedule must curve downwards to the left, showing that in greater numbers even superior specimens must sell at a lower price in order to provide sufficient inducement to extra-marginal consumers to embark upon ownership, and to induce all owners in the second-hand market to scrap their assets early enough. Ultimately, because holding costs are not the only costs of ownership, demand for ownership must become entirely inelastic to further reductions in holding cost. What it is important to remember is that the "price" in the second-hand market which affects the demand is the cost of ownership as determined by the price of a unit of a given age.

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[1] The ceiling would coincide with PT itself if it were assumed that consumers' knowledge was so perfect that they had no preference between owning a " new " asset for all its life and acquiring one which had been used—and possibly misused—by someone else. Also if the divisibility problem mentioned at p. 104, n.1 is present, the upper limit of holding costs for second-hand demand may lie above the level PT in its lower range. The possibility which has been introduced here of a transfer to first ownership need not vitiate the assumption of fixed numbers behind the supply schedule PS, since it represented the body of fashion-conscious owners. The marginal transfers to the new market would in the first place result in owners who travelled all the way down the curve PT and never had occasion to encounter any second-hand demand.

Market Equilibrium and Short-run Change

Using the kind of schedules of second-hand demand and supply which have been constructed, we may now examine the nature of market equilibrium in the long run. In Figure 5 the two schedules intersect at W, showing that an annual supply of $\frac{N}{OA}$ units will pass into second ownership at an age of A years and at a market price OQ. Since the numbers of goods passing through the two sectors are the same, it follows that the ratio of the number N of first owners to the number U of second owners is proportional to the length of time spent in the hands of each : $\frac{N}{OA}=\frac{U}{AT}$ or $U=N\cdot\frac{OA}{AT}$.

The period of "production" of an A-year-old second-hand product thus being OA years, the type of long-run equilibrium which has just been examined might be very long indeed. We need to consider what will happen in the transition to any new equilibrium position. Let us therefore postulate an increase in the strength of second-hand demand as indicated by a shift of the demand schedule to D′D′. If the average age and hence number of transactions were to remain as at W, the intersection of the new demand schedule with the supply at age OA gives a market price of AX, which represents the price which consumers would pay were the short-run elasticity of supply equal to zero. However, as soon as the market price tended to rise at all above its previous equilibrium at W, the supply of used goods would be increased by the willingness of owners of successively better specimens to part with them, as shown by the supply schedule S. Even in the short run therefore, second-hand market prices would not rise above the level of S ; instead of this the increased rate of demand would shift market activity up the supply schedule and by drawing on stocks already in the hands of first owners, enable the rate of supply to match that of demand. In the first instance, then, this moving equilibrium is attained by the continuous alteration of the average age to which first owners keep their assets before replacing with new ones.

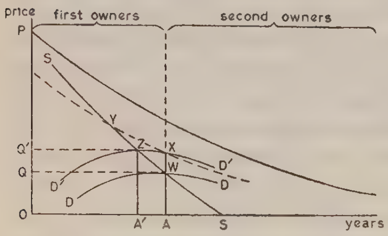

Figure 5

The theoretical limit to this movement is at Y, where the second-hand consumers' depreciation curve through X cuts the supply schedule, for it represents the same holding costs as at X, and is the price which rations the available supply of second-hand units if the actual number forthcoming at a given age still remains unchanged. However, as soon as first owners were induced to part at an age earlier than the previous equilibrium age OA, a larger number of new goods would be purchased at the head of the range. As this wave of additional new purchases travels down the age spectrum, it will meet after a time with the wave of second-hand demand travelling up this spectrum, and will either reverse or slow down its movement until, possibly after some oscillations, conditions would settle to a new long-run equilibrium Z at an age A′ and price Q′, intermediate between Y and W.

In like manner the movement towards a new equilibrium could be traced when demand declined, or when an alteration took place in the conditions of supply. The point emerges fairly clearly from this that where supply in the new market is infinitely elastic, a change in second-hand demand does not involve any change in the level of second-hand prices.

THE CONSEQUENCES OF VARIATION IN THE PARAMETERS

The degree of simplification maintained so far makes it possible to see a little more clearly the nature of the relationships which obtain in the market for new and used goods. Without being able to formalise the conditions any further, we may therefore examine what will happen when we relax some of the assumptions.

Continuing first with a consideration of alterations in the conditions of supply, we find that if the supply of new goods is not infinitely elastic and the new price is permitted to vary, the whole second-hand supply schedule will shift up or down in sympathy with this. Where, as is likely, institutional factors make for rigidity of the new prices, the shortages and waiting lists once the cushion of dealers' stocks is exhausted will result in the raising of the range of second-hand prices even above the new price. The problems of the postwar car covenant scheme in Britain well illustrate this. In such situations new supply and consequently replacement supply of used goods are both small, and the possibilities of arbitrage between the two markets tend to create an infinite demand for the new product, intensifying the administrative difficulties of distribution.

Again, if manufacturers achieve greater success in destroying first owners' pride of possession, the supply schedule would slope more steeply downwards, yielding lower holding costs to second-hand consumers and hence leading to an expansion of ownership in that sector of the market. On the other hand, the total cessation of model change would raise the supply schedule until it represented merely those attitudes conditioned by outward appearance and the risk of breakdown as mentioned in page 104 above. This would diminish the total rate of second-hand transactions, and hence the rate of new sales to the present body of first owners. It would, however, encourage the transfer of owners from the used to the new sector. Similarly, a reduction in the durability of the product would be reflected in the higher incidence of repair costs, increasing the slope of the whole family of depreciation curves for which the repair cost curve was responsible. This would reduce values in the second-hand market, and thus reduce the volume of new sales, even though it left the subjective depreciation curves of the fashion-conscious no steeper than before. This illustrates the point that physical depreciation is not always irrelevant to the factors which affect the disposal of obsolete equipment.

The diversity of consumers' attitudes towards depreciation must next be considered. They will in fact vary from the owner who at all costs must have the latest car as soon as it comes out, to the successful " tinkerer " and the optimist who keep their motor cycles roaring or coughing long after the normal economic point of discard. There is the hard-up young writer who must have a cheap typewriter even though it gives poor value for money, and the retired schoolmistress who has bought a radio set new and keeps it until she begins to think she is going deaf. From all this there will emerge numerous possibilities of contact and exchange. The situation might be formalised as a multi-sector instead of a two-sector market, with goods changing hands several times on their downward course wherever one set of consumers' depreciation curves was intersected by any of a shallower slope.

A further prolific source of variety in the second-hand market is that found amongst the new products themselves. To take a very simple case, if the different prices and qualities of new products were simply proportional to their durability, and repairs were not possible, the annual depreciation of all specimens of all ages would have a constant value, and prices in the second-hand market would be proportional to residual value. However, it is possible that a higher price may not involve a correspondingly longer life, because the manufacturer has succeeded in differentiating his product by means of advertising. Such prestige value is not necessarily lost immediately the goods become second-hand, for fashion consciousness is not the sole prerogative of first owners ; but the distinctions created between the differing makes become less marked further down the scale until their influence upon relative second-hand values is overborne by the other factors at work.

Chief amongst these factors is probably the influence of higher running costs for the more expensive equipment. If ownership is largely conditional upon economy of operation, prices in the market for used goods will have to be low enough to offset the disadvantages in running costs by a lower capital cost.[1] Here the point arises that such goods

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[1] The following prices obtained from *Glass' Guide to Used Car Values* well illustrate this :

	New 1935	*Used* 1939
Austin 7	£112	£51
Chrysler 27	£429	£38

would prove to be a worth-while bargain to anyone intending less than normal utilisation : perhaps a plate camera kept in reserve for photographing church interiors.[1] Similarly, where size is the distinguishing mark of a more expensive new commodity—say a grand piano, the relative prices of large and small in the second-hand market will very much depend upon the relative strength of demand for size amongst first and second owners. The strikingly low value of massive second-hand furniture as compared to small suggests that second owners are less likely to live in circumstances which make them prepared to pay for size. The two sets of second-hand prices thus tend to draw closer together. More than this, it is clear that there will be a high likelihood that the second-hand range of the more expensive products will be in direct competition with cheaper new products.

Having introduced variety of new product, we may now add a change of needs on the part of the consumer as a further factor which affects the replacement of durable goods. A growing family may require a larger car, refrigerator or washing machine long before the useful life of the old one is exhausted. Furthermore the period for which most durable goods live is long enough for considerable increases and decreases of income to take place before they are worn out and need replacing.

In the light of this analysis we shall consider certain effects upon manufacturing policy and consumers' demand which emerge from the basic relationship discovered.

Manufacturing Policy

The repercussions of this relationship upon the production of durable goods require some emphasis, as they are often neglected. The typical development of modern durable goods may be divided into three broad stages.[2] In the first and experimental period they are offered in small numbers and at high cost, gaining a foothold in the upper income groups. Then there follows a great expansion of sales as large-scale production reduces costs and demand reacts both to the fall in price and to the " demonstration effect " of expanding ownership. Further expansion of ownership then waits upon technological improvement, and the majority of sales go to existing consumers. It is at this stage that there may be found the tendency for competition to cause more changes in the form of the product than is justified by the content of such change. Whilst frequently the subject of comment, this feature is not always considered in relation to its derivative activity in the second-hand market.

For example, the criticism is often voiced that there should be made available much simpler, standardised products, produced on a large scale and in long runs, and cheap enough thereby to come within the purchasing power of a large class of consumers hitherto excluded. R. T. Norris, in her work on consumers' demand, suggests that there is a rich reward for " social experimentation at the bottom of the cost ladder ".[1] Without doubt the classic example of this is Henry Ford's Model T, which continued basically unchanged from 1911 to 1927. The Temporary National Economic Committee in 1940 were concerned with this question of price reduction, and asked Edsell Ford what were the chances of a repetition of his father's success. His answer was :

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[1] Similarly, it may pay to own a piece of equipment in disrepair if intended usage is less than normal.

[2] Cf. E. A. G. Robinson: " The Pricing of Manufactured Products ", *Economic Journal*, June, 1951, p. 432.

> There have been several factors which have entered into the problem since the day when we built a very low-priced car. The first one was that those cars were being sold to original owners to a great extent . . . In the meantime they purchased that car and many others and have created a used car field. Now the used car is merchandised by a dealer, and in the market for that used car is the man who bought a new car in that very low-priced field.[2]

This and similar testimony by Paul Hoffman, suggest that in the car industry at least design and prices have tended to move away from the lower end of the possible range of quality because of the competition of second-hand specimens from higher up the same range. Expansion of sales directly to first owners may thus be confined to the second stage only in the development of a product ; thereafter, while expansion does not stop, it takes place more indirectly through the handing-down process in the second-hand market. There are good grounds in theory and on the evidence available for believing that the majority of marginal owners will be found in the second-hand market.[3] If this is so it may be self-defeating policy for manufacturers to attempt to maximise their sales by appeal to both the intensive, that is, the replacement, market, and the extensive market for fresh owners concurrently, which is what an American study has advocated.[4]

A postwar parallel to the case of the Ford Model T is perhaps the introduction in this country of the Hoover washing machine. It was small, simple, cheap and effective, and offered the basic service of agitation only. It soon sold more than all other makes taken together. The future development of this market will be of great interest for already a superior and larger model is in production, although the original model has not been discontinued.

In industries where second-hand activity is well-developed there is often much muddled thinking on the subject of scrapping older specimens in the hopes of stimulating replacement sales. Although it can be shown that in normal competitive circumstances it does not pay a manufacturer to reduce the durability of his product, it is less easy to see that the various forms of scrapping scheme which are from time to time proposed will likewise bring no benefit. An example of faulty economic reasoning is found in the following quotation :

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[1] R. T. Norris : *The Theory of Consumers' Demand.* (Yale, 1952), p. 182.

[2] T. N. E. C., *Hearings.* Vol. 30, p. 16330.

[3] Even before the war, it was the experience of the U.S. and the British motor trades that over 90 per cent. of the customers to whom they sold new cars already possessed one : yet less than half of these new sales were being offset by cars falling out of use. From the point of view of the car population as a whole, that implies that only one half were replacements.

[4] T.N.E.C. Monograph No. 1 '*Price Behavior and Business Policy*' (Washington, 1940), p. 138.

> Fewer cars are being sold today because the public are being called upon to face more depreciation than they can honestly and truly afford . . . If we could scrap a similar number of cars per week to the number of cars actually manufactured, we should be able to guarantee the motor user a fair price for his car to change annually by virtue of the fact that reliable used cars would become scarce.[1]

Two main approaches may be discerned to the problem of securing the necessary scrapping. The first involves obtaining old goods from consumers either by purchase or part exchange, and subsequently destroying them to prevent their reappearance in the market. In terms of the earlier analysis Figure 6 shows that to secure the withdrawal of assets from circulation at any time OX earlier than their economic life OT, it would be necessary to pay the sum WX for each item. Since the net value obtainable after collection and then salvage of materials is low, this amounts simply to a price reduction of the new product, and will eventually increase the number of used goods in existence and hence the sum required to remove them. Although such schemes have frequently been launched, they usually founder on the reluctance of either the manufacturer or the distributor to bear the financial cost of the programme.

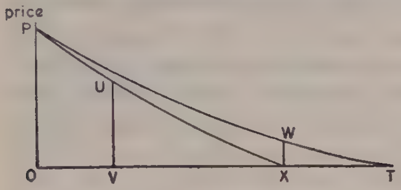

Figure 6

Thoughts therefore turn to the second approach whereby old goods may be rendered valueless in their owners' hands say by time OX. This might involve, for instance, discontinuing the production of spare parts or else it invokes the aid of a *deus ex machina* ; for example the long hoped-for intervention of the Ministry of Transport to clear old vehicles off the roads in the interests of road safety. Discounting of such an eventuality by owners would therefore result in a steeper depreciation curve PX. While it is quite true that this makes the second-hand commodity scarcer, and the cost of second-hand goods greater, it does not imply that the unit value, say at age OV, is any higher. It is in fact lower because the new second-hand price UV will purchase only VX years of service. This must react adversely upon purchases of new goods unless all the demand for ownership is highly inelastic to the level of holding cost, and the very reasons which went to create a second-hand market presuppose that this will not be the case.

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[1] Letter in the *Motor Trader*, 24th August, 1938, p. 202.

IMPLICATIONS FOR CONSUMERS' DEMAND AMD ECONOMIC WELFARE

We come finally to the effects of second-hand activity upon consumers' demand for durable goods. It is easiest to see the economic effect of this by contrasting it with a situation in which no resale of assets is possible once they are acquired. This would limit ownership for two reasons. In the first place the fear of complete illiquidity would in some cases form a barrier to acquisition; and where it did not there would still be a great inflexibility of holdings in the face of a growth of income and tastes.[1] In the second place it naturally debars those who cannot afford the holding costs or obtain the credit associated with the purchase of the new product.

Thus the emergence of a second-hand market partly solves the problem of divisibility and flexibility of holdings, overcoming the " unit cost " and the " liquidity " barriers to ownership, and it is in this connection that second-hand markets have received notice in economic theory. Extending far beyond this, however, is its rôle in facilitating an earlier replacement by the fashion-conscious than would otherwise be possible by virtue of the fact that a considerable resale value may be realised. This resale value, on the other hand, represents lower holding costs for the second-hand consumer with less exacting standards of appearance or performance. It is thus natural that the second-hand market should become a main gateway for recruitment to the ranks of ownership, capable of transmitting an extension of demand upwards to the market for new goods in the form of a more intensive replacement demand from first owners.

The case made against change of model by writers concerned with welfare economics appears to rest on the waste of such a process as compared with the economies to be achieved by longer runs of production. An example may be cited from Baumol :

> Periodic changes in design are regularly introduced as a means of increasing demand for clothing, automobiles, radios and cameras, and the social loss (to the extent that it is not offset by satisfaction derived from the change *per se*) is not always likely to be inconsiderable.[2]

In the light of the present analysis this requires re-appraisal. Whatever view may be taken of the social desirability of paying for change *per se*, there remains the practical by-product that the goods involved are then available to second-hand consumers at a price lower than they otherwise would be. What this amounts to, therefore, is a voluntary redistribution of real income between the two groups which together comprise the total body of consumers. In whatever manner we choose to reckon this conversion of an alleged loss into a form of gain, it must be recognised before pronouncement upon the social effects can be made.

The measure of the advantage accruing from this skimming of the cream and handing on the milk cheap is not necessarily to be found in a comparison of the costs of owning second-hand goods with those of the lowest-priced new commodity ; for it has already been suggested that second-hand activity may prevent the realisation of the maximum potential economies of standardisation and large-scale new production. It is conceivable that second-hand goods have not in fact been made available at lower cost than if all consumers bought a single, standardised product produced over a very long run. Much would depend upon how large a contribution was being made in any particular case by the fashion-conscious. But even where fashion is not an important factor, it may be asked whether consumers would not value variety more than utter uniformity. Through the joint market for new and used goods this is certainly being provided at lower cost than if attempts were made to satisfy it through new sales alone. It must never be forgotten that the present volume of sales under a system of model change is only attained by the indirect support of the market which it is often asserted should be tapped directly. When one is killing two birds with one stone why throw a second stone ?

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[1] It should be remembered that even in a stationary state the individual income unit is experiencing growth most of the time, like the trees in Marshall's forest.

[2] W. J. Baumol : *Welfare Economics and the Theory of the State*, p. 89.

CONCLUSION

The analysis presented here is of course applicable to any conditions in which the value of an asset to one group of consumers is different from that to another. Emphasis has perhaps been placed upon response to changes of design as a determinant of second-hand activity because it is such an important case in certain industries and countries. It is well enough known that social attitudes in Britain are less susceptible to such influences than in America ; and it is doubtful whether it is the disparity of real incomes which is solely responsible for this. There are several signs that manufacturing and sales policies in this country will not follow exactly the paths of their American counterparts ; on the other hand it seems likely that the element of conspicuous consumption which infuses second-hand market relationships will tend to grow with income unless the economy undergoes an unprecedented dose of egalitarianism. Even in Britain the humble vacuum cleaner is subject to induced obsolescence.

The picture emerging from this study of second-hand activity is of a continuous handing down the line. From the first group of consumers who value reliability, newness, or the idea of being first in the field, durable goods may pass to second owners whose concern is simply to obtain the basic service ; and from them pass perhaps to those who like to do their own repairs and avoid heavy repair costs, or to those who cannot find funds to buy a new article even though their income will sustain the costs of ownership. In providing the opportunities for such exchanges the market for consumers' assets makes it possible for consumers to specialise in the type of satisfaction they derive from ownership, and in lowering the cost it extends the market for the new product indirectly by intensifying replacement demand. In all this it caters both for great variety of tastes and for constant change of circumstance with a flexibility which the market for new goods alone could scarcely achieve.

The London School of Economics

The Relationship between the Size of Joint Stock Companies and the Yield of their Shares

By E. Victor Morgan and Cynthia Taylor

The financial problems of the small firm have been a source of longstanding interest to economists. Usually, however, these problems have been discussed in terms of the cost of issuing capital, and " small " has been interpreted in a rather strict sense, perhaps an initial capital of less than £250,000. It seems plausible to suppose, however, that if small firms are at a disadvantage in the capital market, this would show not only in high costs of making an issue, but in the relatively high yield of existing shares in small firms. Moreover, in view of the growing importance of institutional investors in the equity market, it seems likely that, if this disadvantage of small firms exists at all, it would extend considerably further up the size range than £250,000. The object of this enquiry was, therefore, to examine the relationship between size and yield so as to test these two hypotheses.

The first problem which arose was, of course, the selection of the sample of companies for investigation. It was desired to take account only of size and to exclude such factors as a bad past record, ignorance of a company on the part of the public and a virtually dormant market, except in so far as these depend on size. A random sample of all public companies would probably have given too much weight to these partly irrelevant influences, and it seemed better to concentrate on a group of firms with a reasonably good record, and which had received at least their fair share of public notice. A convenient method of doing this was by reference to the " Company Comments " column of *The Financial Times*, and the attractiveness of this was enhanced by the fact that much of the information required was given in these comments, so that the work of extraction and calculation was considerably simplified.

The method adopted was, therefore, to start with all the companies mentioned in " Company Comments " during the year from August 1954 to August 1955. We then excluded companies not primarily engaged in manufacture or trade within the United Kingdom, companies which did not declare a dividend during the year, and a small number for which we were not able to obtain all the information which we required. We were then left with a list of 553 companies, to which the subsequent analysis refers. We must emphasise, however, that the method of selection is by no means random, and is likely to include among the smaller firms mainly the more attractive and, therefore, lower yielding ones. In other words, the method of selection is one which is distinctly unfavourable to our hypothesis.

Dividend Yield \ Capital £m.	Under ¼	¼–½	½–1	1–2	2–4	4–8	8–16	16–32	32 & over	Total
Under 3%				M	P	B	S			4
3–4%		F	M	BFFMYY	ABFG	DGJJMP	BDDDFFGIIJM	FJ	BIIS	35
4–5%		G	FFGGMMOY	BBBDGGKMPS	ABDDEFFFGGG GGGGGGGGJJ JMMNOOPSYY	EFFFGGGGIJ MWYYYYZ	BDFFGGGIIM MMNOSY	DFGIIJNY	FIIJPYZ	98
5–6%	K	JY	DFGGGGJLMO	BBFFGGGGJKK LMMMRS	ABBDDDDE FFFFGGGGJKL NNQRSSUUYYY	ABBDFGGGJJ JKMNRSY	ABBFGGJLM PSYYYY	ADDIJLMO	AG	102
6–7%	G	BDFGGMM	BBBBGGGGJJ MOYY	AABBBBBDEGG GGGGGGJJJK MMMPRTU	AABDEFFGGG GGIJKKLMP QQQRRRS	FGJMQRTU WZ	AABGJQ	APS		95
7–8%	DY	EEEGJKUU	ABBBDDEEEGJJ LOUWYY	AABBBBEJJK MRUUVX	AEGJMSTU	AAAAAGGPPT	AALMU			67
8–9%	R	BBBEGGGGG JU	BBBBCEEFFFGG GGKMMQRTWY	ABCCEEGGG MMRSUU	BEKRRSSY	PUW		X		61
9–10%	DE	CEGGJWY	CEGGOQRSUVV WWWYYYY	EGJJLST	GKLTXY		H			41
10–11%	GLW	BEEER	BEMWW	UU	ENTV					19
11–12%	EGG	EUUUV	GMRW	TU	W		T			16
12% & over	EGY	KTUUW	JPPTU	BY						15
Total . .	16	52	105	106	119	64	56	22	13	553

KEY

A—Breweries, wines and distilleries
B—Building and materials
C—Catering, hotels, restaurants
D—Chemicals and allied
E—Clothing
F—Electrical and radio
G—Engineering
H—Entertainment
I—Insurance
J—Food
K—Household goods
L—Iron and steel
M—Motors and aircraft
N—Newspapers and printing
O—Paper-wrappings, containers, etc.
P—Shipping
Q—Shipbuilding
R—Shoes and leather
S—Stores and warehousing
T—Cotton textiles
U—Wool
V—Rayon
W—Miscellaneous textiles
X—Tobacco
Y—Miscellaneous industrials
Z—Others

Even when the sample had been selected, there were still several problems of definition to be dealt with. These were:

(1) *The Criterion of Size.* The criterion chosen was the market value of capital, and this was calculated by taking the number of shares, of all types, as recorded in the 1955 issue of the Stock Exchange Yearbook, and valuing them at the mean of the high and low prices recorded in that publication.

(2) *The Criterion of Yield.* Here the choice lay between dividend yield and earnings yield. Both dividend and earnings must obviously have an influence on the price of a share, and it is common to find companies with a conservative dividend policy showing a very low dividend yield and a high earnings yield. The only satisfactory solution seemed to be to perform the basic calculations for both types of yield, and this was done.

(3) *The Date of Calculation of Yield.* The alternatives were to calculate the yields for all companies on the basis of the prices ruling at a single date or to calculate each at the date when it was mentioned (normally immediately after the publication of results and the declaration of a dividend). The obvious disadvantage of the second method is that, since stock exchange prices fluctuated considerably during the period of the investigation, comparison of the yields of companies reporting at different dates might be vitiated by changes in market conditions. Calculation at a fixed date avoids this difficulty, but only by creating another. The date chosen, whatever it may be, must be immediately after the declaration of a dividend for some companies, and immediately before, for others. Calculations have to be made on the basis of the last dividend, but, for companies in the latter group, the price of shares will be determined less by the last dividend than by expectations of the next one. At a time when profits and dividends are generally rising (as they were during the period of this investigation) calculation of yields on the basis of prices ruling at a uniform date will, therefore, tend to give artificially low yields for companies whose last accounts were a long time before the chosen date. Again, the only satisfactory method seemed to be to perform the basic calculations for both dates.

Another possibility of bias in our results lies in the differences, both in size of firms and in average yields, between different industries. For example, the textile industries contain more than an average proportion of small firms; they are also regarded by the market as having poor growth prospects and so, in general, carry high yields. On the other hand, the electrical engineering industry contains a predominance of large firms, but also yields are low because the market regards the growth potential as very great. Thus there is the possibility that large firms may have lower yields not because they are large but because, in general, they happen to find themselves in what the Stock Exchange regards as " growth industries ". To see whether this is so or not it is necessary to group our firms by industry, and this is done at a later stage.

We may now begin to present the results of our statistical work. First, the 553 companies were classified by size and yield according to the classification used by *The Financial Times* in its analysis of company profits. This is shown, for dividend yield at date of reporting, in Table 1: Tables 2 and 3 show, for the group as a whole, the dividend yield at date of reporting and at a fixed date (13/8/55) respectively.

TABLE 2

RELATIONSHIP BETWEEN SIZE OF COMPANY AND ITS DIVIDEND YIELD AT DATE OF COMMENT IN *The Financial Times*

Capital £m. / Dividend yield	Under ¼	¼–½	½–1	1–2	2–4	4–8	8–16	16–32	32 & over	Total
Under 3% ..				1	1	1	1			4
3–4% ..		1	1	6	4	6	11	2	4	35
4–5% ..		1	8	10	31	17	16	8	7	98
5–6% ..	1	2	10	17	30	17	15	8	2	102
6–7% ..	1	7	14	28	26	10	6	3		95
7–8% ..	2	8	18	16	8	10	5			67
8–9% ..	1	11	22	15	8	3		1		61
9–10% ..	2	7	18	7	6		1			41
10–11% ..	3	5	5	2	4					19
11–12% ..	3	5	4	2	1		1			16
12% and over	3	5	5	2						15
Total	16	52	105	106	119	64	56	22	13	553

TABLE 3

RELATIONSHIP BETWEEN SIZE OF COMPANY AND ITS DIVIDEND YIELD AT FIXED DATE (APPROXIMATELY 13/8/55)

Capital £m.	Under ¼	¼–½	½–1	1–2	2–4	4–8	8–16	16–32	32 & over	Total
Under 3% ..			2	1	3	3	6			15
3–4% ..		1	3	2	14	10	11	5	8	54
4–5% ..		2	12	11	29	13	13	9	4	93
5–6% ..		4	14	20	22	12	11	5	1	89
6–7% ..	2	3	9	19	18	14	9	1		75
7–8% ..	4	4	13	15	11	8	1	1		57
8–9% ..		14	15	16	7	2	3			57
9–10% ..		5	17	7	5	1				35
10–11% ..	4	6	8	5	4		1			28
11–12% ..	2	1	2	3	4		1			13
12% and over	4	12	10	7	2	1		1		37
Total	16	52	105	106	119	64	56	22	13	553

In working out a co-efficient of correlation between size and yield, we encountered the problem that the size distribution of the group was far from normal. The presence of a small number of companies of very great size imparted a considerable degree of skewness. The distribution of the logarithms of the size was however, approximately normal, and we therefore calculated the coefficient of correlation between the logarithms of size and actual yields.[1] The result showed a negative correlation of – 0.531 and – 0.494 respectively. Table 4 shows earnings yield at the date of reporting. A similar procedure was followed in correlation, and resulted in a coefficient of – 0.226.

TABLE 4

RELATIONSHIP BETWEEN SIZE OF COMPANY AND ITS EARNINGS YIELD AT DATE OF COMMENT IN *The Financial Times*

Capital £m. / Earnings yield	¼	¼–½	½–1	1–2	2–4	4–8	8–16	16–32	32 & over	Total
Under 5% ..		1	2	2	1		1			7
5–10% ..	1	4	9	15	18	15	8	5	2	77
10–15% ..	8	12	18	27	44	25	22	11	1	168
15–20% ..	1	14	26	38	27	17	8	2	3	136
20–25% ..	1	13	24	13	11	6	8		2	78
25–30% ..	2	7	20	9	9	1	1			49
30–35% ..	1	1	5	3	2	4			1	17
35–40% ..			1	1	1					3
40–45% ..		4	3		1					8
45% and over	1		2			1		1		5
Total	15	56	110	108	114	69	48	19	9	548[2]

Table 5 shows the information in terms of average yield for each of a number of size groups. Dividend yield, both at date of comment and at fixed date shows a uniform downward tendency from the small firms with a capital of less than £500,000 right up to the giants of £32 m. and over. The tendency is strongly marked up to a size of about £5m.; the £4 m. and under £8 m. group has a yield of 5.5 per cent. on both bases, compared with 9.1 per cent. at date of comment, and 10.0 per cent. at fixed date for the " under £500,000 " group. There is a similar tendency in earnings yields, though it is less regular, and concentrated mainly in the three smallest size groups. The relationship between size and dividend cover is shown in the last column of Table 5 and, in more detail, in Table 6. The three groups with a capital of under £2m. have a smaller average cover for their dividends than have the larger firms. As between the larger firms, however, there is little difference in this respect, and a correlation analysis of size and cover for the whole group gave a co-efficient too low to be statistically significant.

Looking at our results from another point of view we can analyse the size distribution of companies having high and low yields, and

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[1] For the suggestion of this method I am indebted to Mr. H. J. Godwin.

[2] This table refers to only 548 companies, as we were unable to get a satisfactory figure for earnings yield in five cases.

TABLE 5

RELATIONSHIP BETWEEN SIZE OF COMPANIES AND AVERAGE YIELDS

Size group	No. in group	Average dividend yield at date of comment %	Average dividend yield at fixed date %	No. in group	Average Earnings Yield at date of comment %	Average Cover
Under £500,000	68	9·1%	10·0%	71	20·9%	2·3
£500,000 and under £1 m.	105	8·0%	8·0%	110	19·9%	2·5
£1 m. and under £2 m.	106	6·9%	7·4%	108	16·2%	2·3
£2 m. and under £4 m.	119	6·0%	6·1%	114	16·1%	2·7
£4 m. and under £8 m.	64	5·5%	5·5%	69	15·4%	2·8
£8 m. and under £16 m.	56	5·1%	5·0%	48	13·8%	2·7
£16 m. and over	35	4·8%	4·6%	28	14·8%	3·1

TABLE 6

RELATIONSHIP BETWEEN SIZE OF COMPANY AND ITS DIVIDEND COVER AT DATE OF COMMENT

Times covered \ Capital £m.	Under ¼	¼–½	½–1	1–2	2–4	4–8	8–16	16+	Total
Less than once		3	9	7	3				22
1–1·5 times	8	8	11	13	17	5	5	7	74
1·5–2 ,, ...	1	11	20	20	16	17	11	5	101
2–2·5 ,, ...	4	12	16	18	21	10	16	5	102
2·5–3 ,, ...	1	6	17	16	14	6	5	4	69
3–4 ,, ...	3	5	29	22	32	14	6	3	114
4–5 ,, ...	1	5	8	7	7	4	5	2	39
5–10 ,, ...		2	7	5	7	7	6	5	39
10 times + ...		1		1		2			4
Total	18	53	117	109	117	65	54	31	564

Note.—This table includes rather more companies than the previous ones, as there were a few for which we had a figure for dividend cover, but not sufficient information to calculate a precise yield.

this is shown in Table 7. Of 39 companies with a dividend yield of under 4% at date of comment, 25 had a capital of over £4m. and only 2 of below £1m. Of 50 companies with a yield of over 10%, 38 had a capital of less than £1m. and only 1 of more than £4m. On the fixed date basis, 69 companies had a yield of under 4%; 43 had a capital of more than £4m., and 6 of less than £1m. There were 78 companies with a yield of over 10%, 49 of them with a capital of under £1m., and only 4 with over £4m.

The extremes of our yield range present certain peculiarities at both ends. A company may have a high dividend yield in relation to others of its size if it has an unusually low cover; alternatively, it may have high dividend and earnings yields if the industry concerned is regarded as having high risks or poor growth prospects, or if the management of the particular firm is suspect. Examination of the group with a dividend yield of more than 10% at fixed date revealed four companies of more than £4m. and 10 of from £2m. to £4m. out of a total of 78. Of these, eight were in the textile and clothing industries, two in tobacco, and one owned a cinema chain. Earnings yields for these firms varied considerably but the main reason for their high dividend yield appeared to be the poor growth prospects of their industries. The remaining three companies (one in newspapers, one in plastics manufacture and one a metallurgical firm) all had low earnings yields and rather chequered records.

TABLE 7

SIZE DISTRIBUTION OF COMPANIES WITH DIVIDEND YIELDS OF UNDER 4% AND 10% AND OVER, AT DATE OF COMMENT AND AT FIXED DATE (FROM TABLES 2 AND 3 RESPECTIVELY)

Capital £m. / Dividend yield	Under ¼	¼–½	½–1	1–2	2–4	4–8	8–16	16–32	32 & over	Total
At date reported—										
Under 4% ..		1	1	7	5	7	12	2	4	39
10% and over ..	9	15	14	6	5		1			50

Capital £m. / Dividend yield	Under ¼	¼–½	½–1	1–2	2–4	4–8	8–16	16–32	32 & over	Total
At fixed date (13/8/55 approx.)—										
Under 4% ..		1	5	3	17	13	17	5	8	69
10% and over ..	10	19	20	15	10	1	2	1		78

At the other end of the scale, a firm may have a low dividend yield in relation to its size either because it is very good or very bad. The firm with a very conservative dividend policy will have a low dividend yield offset by a very high earnings yield. The firm in a " growth industry " or the firm which is believed to have an exceptionally progressive management may enjoy low dividend and earnings yields. On the other hand, when a firm is so badly run or so unfortunate as to make little or no profit, the break-up value of its assets and the possibility of a take-over bid still set a limit to the fall in the price of its shares. If such firms paid no dividend they were excluded from our sample. Some which paid a low dividend will, however, have crept in and, with low dividend and earnings yields, will be difficult to distinguish at first sight from their progressive rivals. Of 69 companies with dividend yields of less than 4%, only nine had capitals of under £2m. Of these, seven had their dividends very highly covered (from four to nine times); one had a poor cover and a bad record, and one did not fall clearly into either category.

The presence of these oddities at both ends of the scale has a considerable influence in reducing the numerical value of a correlation co-efficient. In fact, however, they are only extreme examples of the many influences, other than size, which affect the yield of stock exchange securities. Unfortunately, none of these influences can be measured precisely, so that it is not possible to allow for them by multiple correlation analysis. In view of their obvious importance, however, the correlation between dividend yield and size appears satisfactorily, indeed surprisingly, high.

There remains, however, the possibility already mentioned, that the correlation might represent no more than the concentration of small firms in static or declining industries, and large firms in expanding ones. Table 8, therefore, shows the relationship between size and dividend yield (at date of comment) for seven industrial groups: food;

TABLE 8

RELATION BETWEEN CAPITAL SIZE OF COMPANY AND DIVIDEND YIELD AT DATE OF COMMENT IN *The Financial Times*. LETTERS IN BRACKETS REFER TO THE CORRESPONDING GROUP OR GROUPS IN TABLE 1

(*a*) FOOD (J)

Dividend yield \ Capital £m.	Under ½	½–1	1–2	2–4	4 and over	Total
Under 5%				3	7	10
5–6%	1	1	1	1	5	9
6–7%		2	3	2	2	9
7–8%	1	2	2	1		6
8% and over	2	1	2			5
Total	4	6	8	7	14	39

(*b*) BUILDING (B)

Dividend yield \ Capital £m.	Under ½	½–1	1–2	2–4	4 and over	Total
Under 5%			4	2	4	10
5–6%			2	2	4	8
6–7%	1	4	5	1	1	12
7–8%		3	4			7
8% and over	4	5	2	1		12
Total	5	12	17	6	9	49

(*c*) ENGINEERING (G)

Dividend yield \ Capital £m.	Under ½	½–1	1–2	2–4	4 and over	Total
Under 5%	1	2	2	12	10	27
5–6%		4	4	4	6	18
6–8%	4	5	8	6	4	27
8–10%	7	6	4	1		18
Over 10%	4	1				5
Total	16	18	18	23	20	95

(*d*) MOTORS AND AIRCRAFT (M)

Dividend yield \ Capital £m.	Under ½	½–1	1–2	2–4	4 and over	Total
Under 5%		3	3	2	6	14
5–6%		1	3		3	7
6–8%	2	1	4	2	2	11
Over 8%		4	2			6
Total	2	9	12	4	11	38

(*e*) CLOTHING, SHOES AND LEATHER (E and R)

Dividend yield \ Capital £m.	Under ½	½–1	1–2	2–4	4 and over	Total
Under 6%			1	3	2	6
6–7%			2	4	1	7
7–8%	3	3	2	1		9
8–10%	4	5	4	3		16
10% and over	7	2		1		10
Total	14	10	9	12	3	48

(*f*) TEXTILES (T, U, V and W)
(Cotton, wool, rayon and miscellaneous)

Dividend yield \ Capital £m.	Under ½	½–1	1–2	2–4	4 and over	Total
Under 6%				2	1	3
6–8%	2	2	4	2	5	15
8–10%	2	8	3	1	2	16
10–12%	5	3	4	3	1	16
Over 12%	4	2				6
Total	13	15	11	8	9	56

(*g*) Electrical Goods and Radio (F)

Capital £m. / Dividend yield	Under ½	½–1	1–2	2–4	4 and over	Total
Under 4%	1		2	1	3	7
4–5%		2		3	7	12
5–6%		1	2	4	2	9
6–7%	1			2	1	4
7% and over		3				3
Total	2	6	4	10	13	35

building and building materials; engineering; motors and aircraft; clothing, shoes and leather; textiles; and electrical goods and radio. The table makes it clear that there are considerable differences between industrial groups both in the prevailing size of firms and in the general level of yields. It is also clear, however, that the general relationship between size and yield holds, though at different levels, for each industrial group.

To sum up our statistical findings, there is a significant negative correlation between yield and size, as measured by the market value of capital, though this is much stronger for dividend yield than for earnings yield. The correlation is little affected by whether yields are calculated at the date of comment or at a fixed date, and it appears to hold not only for the group as a whole but for the main industrial sub-groups. Moreover, this relationship holds for firms which are much larger than the " small " ones whose problems were discussed by the Macmillan Committee and for whom the Industrial and Commercial Finance Corporation was designed to cater. From this point of view a firm must be regarded as " small " at least until it has a capital of several millions.

There still remains one disturbing possibility. It could be that large firms are, in general, more efficient, more stable and with better growth prospects, and that they enjoy a lower yield not because they are large but because of these other factors. If this were so, the capital market, in placing them on a lower yield basis than their smaller rivals, would not be discriminating against smallness, but merely performing its proper function of enabling the efficient and progressive to borrow on more favourable terms than others. Nothing in our findings either confirms or refutes such a hypothesis. Even if it were true, however, it is unlikely to be the whole truth, for there are good reasons why the large company should enjoy advantages in the yield of their shares. The large firm becomes a " household word " for its products and this is likely to commend its shares, though irrationally, to the less informed investor, while the small firm is likely to suffer from the ignorance of the general public. The existence of a large number of shares makes for an active market and enhances the liquidity of an individual holding. This is an advantage to the personal holder, but it is significant in a special way for the institution; the big institutional holder requires to hold large blocks and, when it deals, to deal in large blocks without unduly disturbing the market; at the same time, most institutional holders are reluctant to hold more than a small proportion of the equity of a company lest they might seem to have an undue influence on its affairs. These factors, combined with the difficulty of managing a portfolio spread over a large number of small holdings, tend to make institutions concentrate on a limited number of well known firms.

If we accept it as a fact that the shares of large and very large firms carry lower yields than those of small and medium-sized ones, we may ask how serious a defect this is in our financial system. The necessity for marketing equities on a high yield basis operates rather differently from a high yield on fixed interest securities. High fixed charge rates mean that the borrower must saddle himself with a relatively large and inescapable interest burden. High equity yields mean that the borrower can raise only a relatively small sum per unit of prospective earnings. This may involve various difficulties and distortions for the small firm.

First, if the small firm is not at so great a disadvantage in respect of fixed interest securities, there would be a temptation to borrow on debentures or preference shares, so that small firms would tend to have a high gearing ratio, and their equity holders would be exposed to a correspondingly high degree of risk. Unfortunately, it was beyond the resources available for this enquiry to collect information about the relationship between size and yield for debentures and preference shares. However, there is some reason for thinking that the small- and medium-sized firm may be at less disadvantage here, as some institutions which are reluctant to hold equities of small firms will take placings of fixed charge stocks.

There will be conflicting influences on the disposition of the firm to finance its capital formation out of profits. The less favourable the terms obtainable outside, the stronger the case for self-financing. On the other hand, the small- or medium-sized firm with a capital programme so heavy that it is bound to come to the market for some, may find that, in order to borrow the sums it requires, it has to pay high dividends on its existing shares, thus reducing the amount of self-financing that it can do.

One thing, however, is fairly clear. A high yield basis for equities is an impediment to borrowing and therefore an impediment to growth. That such an impediment should exist even for firms of substantial size is an undesirable feature of our financial system, though we do not want to exaggerate its importance.

One can hardly look to the personal investor to bring about an improvement in the situation. The supply of personal savings to the equity market presents problems far outside the scope of this article, but even if he does take an increasing interest in equities, the personal investor is likely to stick to the large and well known firm. Investment in the equity of small- and medium-sized firms is a job for the expert, and this raises the question of the behaviour of the institutions.

The rapid growth of pension funds and the tendency both of privately administered pension funds and of insurance companies to invest more in equities are likely to bring an increasing volume of institutional funds into this market. It may well be that the pressure of these funds will keep down yields of the well known firms, and that the search for higher yields will drive the institutions to spread their investment more widely. If this were to be done without undue risk, it would involve the expansion of investment departments and the development of improved techniques of investment analysis. The very large institutions might do this for themselves. The smaller ones might do it on a co-operative basis, e.g. by the formation of investment trusts to manage the assets of a number of small pension funds, as has been done in America; others might work through their stockbrokers or by the employment of specialist investment services. All this would involve cost, but the margin between the yield on shares of the good small firm and the good large one seems wide enough to give a more than adequate return, and such developments would undoubtedly add to the general efficiency of the capital market.

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The Dispute in the British Engineering Industry 1897-98 : An Evaluation

By R. O. CLARKE

" The greatest struggle between Labour and Capital that this Country has ever seen "—wrote a contemporary observer[1] of the dispute then in progress in the engineering industry. Yet the dispute was not the greatest in terms of duration, number of workpeople involved, or working days lost. In 1893, for instance, some four times as many working days had been lost in two disputes in coal mining as were lost in the engineering dispute in 1897. At no time in 1897 were more than 47,500 engineering workers unemployed on account of the dispute.[2] Less than a third of the members of the principal engineering trade union, the Amalgamated Society of Engineers, were affected. Nevertheless there was ample justification for the remark quoted. The 1897 dispute was the greatest head-on clash which had ever occurred in British Industry on the prerogatives of management within the workshop. Nearly all previous large disputes had been about the level of wages or about hours of work. Ostensibly this dispute too was concerned with working hours but the real issue was the limit of union interference with managerial decisions.

Why did such a dispute arise in the engineering industry? The engineering workers had a sober record, rather than a militant one, for nearly forty years. The explanation of their present rôle is complex.

THE ENGINEERING INDUSTRY BEFORE THE DISPUTE

After the removal of export restrictions in 1825 British engineering goods had poured into overseas markets. By 1880, however, increasing competition was encountered from Europe and the United States and although, because of increasing world demand, the industry continued to increase in size, Britain was no longer the undisputed ' Workshop of the World '. Recurrent unemployment became increasingly severe in the industry; more severe than in others, as the records show.[3]

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[1] *Engineering*, 15th October, 1897. (Compare P. Verhaegen, *Socialistes anglais*, 1898, " la grève de 1897 est assurément un des plus terribles conflits entre le capital et le travail dont ce siècle ait été le témoin ".)

[2] Labour Department, Board of Trade: *Report on Strikes and Lock-Outs of 1897*, 1898.

[3] T. H. Burnham and G. O. Hoskins (*Iron and Steel in Britain, 1870–1930*, 1943) show that while, from 1850 to 1860, unemployment was generally the same for the engineering, shipbuilding and metal group as for all industries combined, from 1860 onwards the figure for the former group developed a lead which increased in size as time went by. Thus in 1860–1870 the margin was 16 per cent. and in 1880–90, 26 per cent.

In the late nineteenth century the range of goods produced increased, but the quantities produced increased much more. This directed attention towards improving methods of production and the results became apparent in the last decade of the century in the introduction of automatic machine tools ; in a great increase in the degree of specialisation and in the number of workers ancillary to production ; an increase also in the size of establishments and of firms, this last being promoted by a number of amalgamations, both vertical and horizontal.

Inside the workshop the middle-aged craftsman of 1897 looked back on great changes. At the beginning of the century the millwright had done practically the whole of the engineering work required. Even towards the middle of the century almost all engineering work was carried out by millwrights, fitters (or ' filers '), turners and blacksmiths. By 1897 the division of labour had increased greatly, and there were many new classes, chiefly machine operators such as planers, shapers borers, slotters, and millers. Now the foreman was beginning to lose some of his functions and new functionaries appeared in the shops, inspectors, planning engineers, ratefixers, progress chasers and supervisors whose task was to ensure that machines were run at the proper speeds and feeds. These and others came to harass the workman—or so it appeared to him ; and he looked back longingly to the days of work well done in his own way and in his own time. The skilled workers in the industry, who alone were effectively organised, felt that the changes made were destructive of their personal dignity and pride in their craft. They were afraid of the threat to their livelihood implied in the introduction of the new machines operated by semi-skilled labour, and were dismayed by the introduction of more and more payment by results, the more so because of the increasing cyclical unemployment.

The principal union of the engineering workers had for long been regarded as a model. This was the Amalgamated Society of Engineers, which claimed to cater for nearly all classes of skilled engineering workmen, and was the largest union in the country. It also, in theory, admitted to membership the " machinemen ", the operators of the new machines, few of whom had served an apprenticeship ; in practice, however, many branches would have nothing to do with machinemen, so that the rule admitting them was something of a dead letter. In 1897 this Union had over 91,000 members.

Of the remaining unions in the industry the most important was the Boilermaker's Society, about half the size of the Amalgamated Engineers and primarily active in shipbuilding centres. This Society and most of the smaller unions were affiliated to the ' Federation of Engineering and Shipbuilding Trades ', a loosely knit organisation which, in the absence of the Amalgamated Engineers, was ineffective.

The characteristics of the Amalgamated Society of Engineers are of some importance to the present study. Under such leaders as John

Burnett it had achieved a reputation for caution and good husbandry: its members had shown less interest in trade disputes than in the friendly society side of its work. But towards the end of the '80's a new militancy appeared, with which the names of Tom Mann, John Burns and George Barnes were associated. This was partly a reaction to the changes in the workshops, and partly a sign of increasing dissatisfaction amongst the membership with the long established conservative leadership: militancy was fostered by the growing influence of socialist thought and the example of the new unskilled workers' unions, with their fighting creed. In 1896 Barnes won election as General Secretary, and this marked the victory of the militant elements in the Union.

The reaction of the Amalgamated Engineers to the changes in the workshops was usually blind resistance. This, and the increase in militancy, caused growing friction with the employers.

On the employers' side there was no significant organisation before 1896.[1] Employers were loath to give up any of their freedom of action, and consequently avoided the restrictions of organisation as far as possible. There were, however, some local organisations, and in June 1896 the 'Employers' Federation of Engineering Associations'[2] was founded in Glasgow, comprising local Associations based on the Clyde, the North-East Coast, Belfast and Barrow. The objects of the new body were primarily and expressly defensive, although the organisation could obviously be used for attack. The circumstances now to be described suggest strongly that a national employers' organisation came into being solely as a reaction to the aggressive tactics used by the Amalgamated Engineers.

1897 : THE POINTS AT ISSUE[3]

The year 1897 promised to be at least a moderately prosperous one for the industry. Internally, however, feeling ran high. The new militancy of the Amalgamated Engineers, and the feeling of strength engendered in the employers by the formation of their national federation, threatened an explosion. For tinder there were a number of points, some of which had been fought over before, on which strong and opposing views were held by the parties.

First and foremost, there was what the employers called "the principle of freedom to employers in the management of works". On this the unions'[4] view was that no managerial act which affected their members should be taken without prior agreement. The employers, on the other hand, considered that the unions should not interfere in any way with decisions taken by management in accordance with what management considered to be the best interest of the firm. This right was maintained, they stated, in all manufacturing countries.

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[1] There was a national organisation in the industry, 'The Iron Trades Employers Association,' which included industrial relations among its functions, but it does not appear to have been very active.

[2] Later changed to the Engineering and Allied Employers' National Federation.

[3] A vivid picture of the positions taken up by the parties can be obtained from the verbatim reports of conferences in April, November and December, 1897. Much of interest is also to be found in J. B. Jefferys, *The Story of the Engineers*, 1945, which contains a full account of the dispute written from the union viewpoint.

[4] The smaller unions usually followed the line of the Amalgamated Engineers on general questions; and in this paper, views attributed to "the unions" signify views held generally by the engineering trade unions.

Secondly, there was the question of freedom of employment. The unions usually held that any member was free to refuse to work with non-unionists, and if he so refused he would receive, at least in the case of the Amalgamated Engineers, disputes benefit. Naturally the unions were also anxious that no employer should discriminate against their members in favour of non-unionists. The general policy of the employers, on the other hand, was that a workman might belong to a union or not, as he pleased, and that unionists and non-unionists should work peaceably side by side.

The third issue was the selection, training and employment of operatives, with particular reference to the manning of machine tools. The unions maintained that if any machine were used to do work which had customarily, or sometimes even occasionally, been done by a skilled man, that machine must be operated by a skilled man, however simple the operation. They applied this principle where work of any kind was ' de-skilled '. The employers' view was that since they had bought the machines and were responsible for the work produced they should have complete freedom to select and employ whoever they thought fit to operate them and to give whatever training they thought appropriate to any operative. They stressed that many of the new machines could be operated efficiently by ' raw ' labour after a few days or weeks of training. Many of the operators so trained produced more than the average skilled man would—possibly because of his dislike for the machine. In practice, where the unions failed to enforce the rule that none but their own skilled members should operate the machines, they endeavoured to enforce payment of the skilled rate to whoever did do the work, or at least to obtain a fixed rate for the machine.

Fourthly, there was the question of rates of wages. With the unions, rates below which a member should not accept employment were usually laid down for each trade. While not criticising these rates, which generally conformed to custom and were not unduly high, the employers were not willing to adopt them and maintained that they should be free to employ a man on any rate which was mutually acceptable.

The fifth question was the employers' right to demand overtime. The unions considered that overtime working was entirely voluntary, that is, the individual might work or not as he pleased. Often they went further and said, as the Amalgamated Engineers' working rule for London did in 1894, that overtime should be abolished. There were cases where, in pursuance of union rules, workmen caused great inconvenience by refusing to work overtime to finish an urgently required job. The employers maintained that overtime should be worked as and when they required it. They claimed, however, that it was only in exceptional circumstances that they would press their right if the workman would thereby be greatly inconvenienced.

The sixth question was the working of piecework. The variety of work in the industry made it impossible to draw up piecework lists such as were used in some other industries. Where piecework was in operation prices or times were usually fixed between the management and the workman who was to do the job. There were no agreed safeguards to prevent price cutting or to ensure that the pieceworker made at least a living wage. Ratefixing was in its infancy, and undoubtedly the system of piecework was often abused. With the increasing specialisation and the larger quantities produced, piecework had spread, despite the Amalgamated Engineers' rule of 1874 that no member should take on piecework except where it was an existing practice of the establishment. Having failed to contain the practice, the rule was abandoned in 1892, and district committees were empowered to lay down conditions according to the situation locally. The employers grew increasingly annoyed about the difficulty of introducing piecework and about the practice of limiting piecework earnings by local union rule as was done in some places, fines being imposed on anyone who earned more than the rule allowed.

Lastly, some unions had rules limiting the proportion of apprentices to journeymen. The employers maintained that there should be no restriction beyond that imposed by the obligation to give adequate training. The unions also considered that no apprenticeship should be started after the age of 16. The employers argued that this too was unduly restrictive.

These, then, were the major issues between the parties early in 1897. The differences were wide, and neither side was in a mood to try to settle them except on its own terms. As far as was possible the Amalgamated Engineers tried to ignore the existence of the Employers' Federation, though in April 1897 an attempt was made to overcome some difficulties by a joint conference. Some minor matters were disposed of, but on the whole the conference merely emphasised the deep differences of view on the major issues.

THE OPEN CONFLICT

When the open conflict came, however, it was on an entirely different issue from those discussed above. The 'Sarajevo' of this conflict was a London claim for an 8-hour day, or 48-hour week, to replace the existing 9-hour day and 54-hour week. This objective had been set generally as soon as the 9-hour day had been gained in the '70's, and had been much discussed. A handful of firms had actually adopted the 8-hour day, and in 1893 it was introduced in certain Government workshops. Later the members of the River Thames Ship Repairers' Association conceded the claim. Early in 1897 a Joint Committee of Trades was set up in London on local initiative by the Amalgamated Engineers, the Boilermakers' Society and five smaller unions. The

Joint Committee held a ballot to decide whether to go forward with the 8-hour claim, and out of some 15,000 union members in the area, 2,692 voted in favour and 372 against. On 30th April a circular letter went out to some 800 London firms demanding the 8-hour day.

Some firms conceded the claim, others determined to resist it, and at a meeting on 26th May a London Employers' Association was formed, which immediately made application for membership of the Employers' Federation. The new Association became federated on 5th June ; it was the first Association of the Federation representing firms south of Yorkshire and Lancashire. Immediately on its formation it wrote to the Joint Committee of Trades asking for time to consider the claim. The only reply was a letter to each firm which had not conceded the claim, stating that no overtime would be worked until it was granted. An approach from the Employers' Federation was virtually ignored and the Joint Committee, which had now been joined by a further four small unions, decided to deal with a few firms at a time, and threatened a strike at three London works unless the firms concerned conceded the claim. The Employers' Federation then indicated that if the strike took place 25 per cent. of members of the unions concerned employed in federated workshops throughout the country would be locked out.

At this critical point the Boilermakers' Society instructed their London members to take no part in the dispute.

The strikes took place, and lockout notices were issued to take effect on 13th July. The unions thereupon withdrew all their remaining members from federated establishments. For a time their cause seemed to go well, and a number of firms in London conceded the 8-hour day, although the claim that hundreds of firms had made the concession appears to have been based on wishful thinking. As months went by, however, many firms who had given the 8-hour day reverted to 9 hours, including the members of the River Thames Ship Repairers' Association.

For the present purpose it is unnecessary to give a detailed account of the progress of the dispute, but some notes may serve to provide a proper perspective.

Firstly, it must be appreciated that while the work of the industry was appreciably slowed down it did not stop. Only a minority of engineering workers were trade unionists, and although numbers of non-unionists struck in sympathy (and were supported by the Amalgamated Engineers) the majority stayed at work. Some untrained labour was introduced and the National Free Labour Association claimed to have kept going 20 of the largest firms in London.[1] There was a lot of picketing and some of those who stayed at work lived, for safety, on the factory premises. One enterprising firm—Yarrow's marine engine works on the Thames—chartered a mail steamer as a floating hostel out of reach of the pickets.[2]

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[1] W. Collison, *The Apostle of Free Labour*, 1913. The National Free Labour Association was a union with friendly society benefits but no "trade" aims. It flourished as a strike-breaking body.

[2] Eleanor Barnes, *Alfred Yarrow, his life and work*, 1923.

The press and public opinion were mostly unsympathetic to the unions' cause. For example, *The Times* referred to the "increasing audacity of the tactics resorted to by the Amalgamated Society of Engineers, a body once regarded as comparatively conservative in its action, which has fallen under the domination of an extremely aggressive set of leaders".[1] Alfred Marshall wrote of the unions, "I want these people to be beaten at all costs".[2] Occasionally even union opinion was unfriendly; thus the South Wales District Committee of the Boilermakers' Society considered, "If the engineers are left severely alone to fight their own battle, they have only themselves to blame".[3]

Much attention was given by the press to the difficulties of competing with other countries where in almost all cases wages were lower, hours longer, and restrictive practices fewer, than in Britain. Some writers maintained that the 8-hour claim did not indicate a desire for a shorter working week, but for the customary week with more overtime pay.

There is evidence to show that the 8-hour claim, while genuine in itself, was, when it came to the point, regarded by the Amalgamated Engineers merely as a useful rallying cry. As George Barnes, the General Secretary, said in a letter, "We have averted the fight upon an unpopular issue and have shunted it on to a question upon which we ought to get, and I believe will get, the support of our fellow workmen".[4] The final report by the Labour Department of the Board of Trade states, "Though the immediate cause of the general dispute was the demand for an 8-hours' day in London, the real questions at issue between the parties had become of a much more far reaching kind, and now involved the questions of workshop control and the limits of Trade Union interference".[5]

The employers obtained some public support by giving examples of union dictation and restrictive practices, some being taken from the reports on their activities made by union officials in the Amalgamated Engineers' Journal.[6]

The unions maintained in frequent manifestoes, letters to the press, and speeches, that the only issue was the 8-hour day, and that all would have been well had the Employers' Federation not interfered with the London employers. The leaders of the Employers' Federation were accused of bringing unfair pressure to bear on the firms who had conceded the 8-hour day, to revert to 9-hour working. It was obvious, the unions said, that the sole aim of the Employers' Federation was to crush trade unionism in the industry.

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[1] *The Times*, 13th August, 1897.

[2] Letter to the Master of Balliol, 5th December, 1897. One of a series printed in *Memorials of Alfred Marshall*, edited by A. C. Pigou, 1925. These penetrating letters show Marshall as sympathetic to trade unionism but nevertheless fearful of the effect of a union victory on the economy.

[3] Report in *The Times*, 16th August, 1897.

[4] Sent to the *People's Journal*, Dundee, 7th August, 1897.

[5] Annual report on strikes and lockouts, 1898.

[6] For example, a report in the April 1897 edition referring to a set of rules drafted by a District Committee said "One of the employers objected to our dictation, and offered us counter proposals—which we rejected. After some straight talking, and an application of our machinery for one day, he wrote me accepting our proposals ..."

In October the Board of Trade intervened, and a series of conferences was held in November and December at which the points at issue were thoroughly discussed, and proposals were put forward by the employers. These proposals were twice rejected by the workmen by overwhelming majorities, but after some explanatory notes had been added the terms of settlement were accepted by 28,588 votes to 13,927 and work was resumed on Monday, 31st January, 1898. A fortnight previously the 8-hour claim had been withdrawn.

The reasons for the defeat of the unions were not primarily financial. They were not fighting on a good case—the Webbs[1] observed that they " had put themselves fatally wrong with public opinion by not recognising the need for maximising productivity "—and they had not made adequate preparation for the fight. The militancy and rash optimisim of the leadership hid from them the strength of their opponents and their own weaknesses. Lack of support from the Boilermakers' and the Patternmakers' Societies also weakened their position.

Fundamentally the unions had fought a battle against progress.[2] It was inevitable that new machinery should be introduced, and that unions representing a relatively small part of the manpower of the industry should fail to control its use.

The Terms of Settlement

All of the major issues were dealt with by the terms of settlement, which gave the employers all they could reasonably ask for.

On the issue of managerial rights the employers secured " the right to introduce into any federated workshop, at the option of the employer concerned, any condition of labour under which any members of the trade unions were working at the commencement of the dispute in any of the workshops of the federated employers ". This did not apply to hours of work or to wages.

Under the heading " Freedom of Employment " it was laid down that a workman " shall work peaceably and harmoniously with all fellow employees whether he or they belong to a trade union or not ", that employers " shall be free to employ any man whether he belong or not to a trade union ", and that " Every workman shall be free to belong to a trade union or not as he may think fit ".

The employers reserved themselves full freedom of action on selection, training and employment. Rates of wages were also dealt with, the basis of settlement being that employers should be free to employ workmen at such rates as should be mutually satisfactory. Provision was made for general alterations in rates to be negotiated at local level between employers' associations and unions.

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[1] S. & B. Webb, *History of Trade Unionism*, Introduction to the 1902 edition.

[2] Compare A. Gigot (article in *Le Correspondant*, Paris, 10th March, 1898), " (the employers victory) a été la victoire du progrès humain. Elle a été aussi celle de la liberté du travail."

In respect of overtime there was provision for unrestricted overtime at the employers' discretion in cases of urgency and emergency : otherwise it was limited to 40 hours in any four weeks.

On piecework it was agreed that all federated employers and union members should be free to work piecework, the prices to be paid being fixed by mutual arrangement.

It was laid down that there should be no limitation of the number of apprentices.

The last heading was "Provisions for Avoiding Disputes". In this important section a procedure was laid down with works, local, and national levels of discussion. It was also stated that no stoppage of work should take place until the procedure provided was exhausted.

THE CONSEQUENCES

The ubiquitous nature of the industry, its great importance, and the power of the disputants, made the outcome of the dispute very important. Within the industry itself the consequences were both considerable and long lasting. Since 1898 the more sweeping of the employers' reservations have been limited somewhat, but the only major subsequent attack on managerial prerogatives—in 1922—was defeated. While the employers were victorious and succeeded in obtaining a wide freedom of action, the terms of settlement spelled the end of individualism in bargaining in the industry : districts continued to have differing rates, hours of work, overtime and holiday arrangements, but inevitably, though gradually, uniformity increased. The dispute also laid firm foundations for the future of the young Employers' Federation, which started the dispute with 180 members and finished it with 702.[1] On the union side a regular form of procedure had been secured for dealing with grievances, which might henceforth be taken for settlement outside the establishment in which they arose. That this was appreciated is shown by later statements by union officials. For example George Barnes[2] stated that "the real solid gain following the dispute has been the freedom from stoppages, consequent upon the facilities afforded for the discussion of differences".

Industry-wide collective bargaining had arrived in the engineering industry, and other industries, old and new, took note. The clarification of managerial prerogatives had great influence ; this and other parts of the terms of settlement, in particular the provisions for avoiding disputes, were widely copied, and are often to be seen in textbooks.

There is ground for believing that the limitation of union interference and restrictive practices had an encouraging effect on trade. An article in *The Times* stated: "The position in the engineering trades has greatly improved since the dispute of four years ago, the effects of the famous agreement then arrived at having been most beneficial to the employers, while they have also conferred advantages on the employed."[1]

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[1] Engineering and Allied Employers' National Federation, *Thirty Years of Industrial Conciliation*, 1927.

[2] Article in the *Engineering Magazine*. January 1901.

There was also an important effect on trade union thought. The militants regarded the dispute as a great defeat, and, seeing no hope of turning the tables industrially, turned to the possibility of political action ; regarding the Liberal Party as unsympathetic, they added their weight to those who considered the formation of a purely working-class political party essential.[2]

The economic and political consequences were of importance, but the enduring significance of the struggle lies in its effect on the structure of industrial relations, for it had a catalytic effect and gave rise to a system of industrial relations which in essentials is much the same today, except for the extension of industry-wide bargaining to wages and working conditions. In these respects this dispute marks the end of one era in British industrial relations, and the beginning of another.

London.

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[1] *Crisis in British Industry.* 21st November, 1901.

[2] D. W. Crowley writes, "The main immediate factor in the creation of the Labour Representation Committee in 1900 was the decisive defeat of the A.S.E. in their lockout of 1897, which destroyed the confidence of the unions in their industrial strength". (University of London Ph.D thesis, 1952, "The origins of the revolt of the British Labour Movement from Liberalism, 1875–1906", unpublished.)

Changes in the Distribution of Higher Incomes

By R. G. D. ALLEN

I. TOTAL INCOME

Some information on the distribution of personal income, by ranges of total income before and after tax, is given annually in the Blue Books on *National Income and Expenditure*. Such data have been analysed by Professor Paish[1] and others and I do not intend to pursue the matter here. My purpose is to go into more detail, by type of income as far as the data provided by Inland Revenue permit.

Inland Revenue is undertaking a series of enquiries, at five-yearly intervals, into the distribution of personal income assessed for income tax. These are on a sample basis and the results of the first two enquiries are now available.[2] The first relates to income assessed in 1949-50 (10 per cent. sample of returns) and the second to assessments in 1954-55 (5 per cent. sample of returns). According to the description given of the second enquiry, the sample " comprised approximately one million individuals (or married couples) whose total income from all sources was obtained by reference to their returns and other income tax documents " (Cmnd. 54, p. 66). The income derived from wages, salaries, etc., and also from investments, generally relates to the year of assessment ; but profits and professional earnings are those arising in earlier periods, usually the trader's accounting year which ends in the preceding year to that of the assessment. In the following analysis, the data are described as income for 1949-50 and for 1954-55 respectively. Some labels must be attached ; they must be interpreted rather broadly.

There is also an enquiry, made by Inland Revenue before the last war, which can be used for some comparisons.[3] It was made on assessments in 1937-38 and generally relates to income arising in 1936-37. The label attached in this case, i.e. 1936-37, is a fairly close description of the data.

The information given as a result of these enquiries is circumscribed by Inland Revenue practice and by the classifications adopted. The main data are detailed analyses, in successive bands of total net income before tax, of the composition of aggregate incomes according to type of income. For each income type the number of cases (individuals or married couples) and the aggregate amount of income are both provided. For example, in the total income range of £2,000-2,500 in 1954-55, there were altogether 100,239 cases with an aggregate total income of £222,509,000 (mean income of £2,220) ; of these, there were 56,673 cases of wages and salaries (i.e. principal source of income, Schedule E) with an aggregate of £96,984,000 and a mean wage or salary of £1,710.

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[1] See, for example, F. W. Paish : " The Real Incidence of Personal Taxation," *Lloyds Bank Review*, January, 1957.

[2] *Reports of the Commissioners of H.M. Inland Revenue :* 94th., Cmd. 8436, January, 1952 ; 99th., Cmnd. 54, February, 1957.

[3] 83rd. *Report of the Commissioners of H.M. Inland Revenue*, Cmd. 6769, March, 1946. An analysis of the material is given by E. C. Rhodes : " Distribution of Earned and Investment Incomes in the United Kingdom in 1937-38," *Economica*, February, 1951.

In summarising in Table I these detailed analyses by income type, I select three particular bands of total income in the higher ranges from £1,000 upwards (£500 before the war) and I show the percentage distribution of aggregate total income by income type. I distinguish also the three main groups of taxpayers : married couples, single and widowed men, single and widowed women,

The income types shown, corresponding as they do to the various Schedules of Income Tax, are not exactly what we would wish. Earned income includes family allowances, pensions (at least when ranked as earned for income tax purposes) and other subsidiary income of various kinds. It happens, therefore, that a man is classified as an earner—a " case " in one of the earned income categories—if he has a family allowance or a small pension, even though he is retired and practically all his income is from investment. There have also been some changes in classification over time. The most unfortunate is that, whereas wife's earnings from all sources are shown in 1954-55, only wages or salaries (schedule E) are attributed separately to the wife in 1949-50. This affects the figures for profits and professional earnings which relate to the principal taxpayer in 1954-55 but which include in 1949-50 such earnings of either or both of man and wife.

The Inland Revenue enquiries, while saying nothing (naturally) about evasion, do comment on some kinds of understatement of income which are " overlooked " by Tax Inspectors since they do not imply any deficiency in tax collected. In particular there is some understatement of investment income, arising because of dividends and interest taxed at source, and of the earnings of a wife when the amount involved is less than that which first attracts income tax. Such understatements apply only to total incomes below £2,000 since, beyond this point, Tax Inspectors do not " overlook " the deficiency in view of the liability of the income to surtax. Inland Revenue makes estimates of the necessary adjustments in the two post-war periods, to allow for ommissions of investment income and of wife's earnings below the £2,000 point, and incorporates them in a revised distribution of taxpayers by total income (Cmd. 8436, Table 100 ; Cmnd. 54, Table 80). The adjustments are not carried through to the detailed analyses by income types.

Table I shows only the unadjusted figures. Plus and minus signs are attached to the percentages in the lowest of the three income bands to indicate that some adjustment, generally small, is required in interpreting the data. Figures for the pre-war year of 1936-37 are, in any case, on a rather different level of comparability because of minor changes in classification and practice. The comparison between pre-war and post-war data is inevitably rather rough.

It is indeed striking to see, in Table I, how the general pattern has persisted. Income derived from salaries becomes a less important constituent of the total as the income level rises. There is a corresponding increase, partly in independent earnings, from farming, private business or professional practice, but mainly in income from investments. The change from the pre-war to the post-war periods is what may be expected—a decline in the relative share of investment income. In 1954-55, a married man at the £2,000 level derived on the average about 15 per cent. of his total income from investment ; the corresponding figure before the war was 30 per cent. at the £1,000 level.

There are some significant changes even in the five years from 1949-50 to 1954-55, though they are unfortunately a little blurred in Table I by the change in the treatment of wife's earnings. There is clearly a growing dependence on salaries as the main form of income in the higher brackets, and there is some evidence also that the earnings of wives are of increasing importance for married couples. Against this, the shares both of profits and professional earnings and of investment income seem to have declined in the five years to 1954-55. These trends cannot be assumed to be continuing now ; indeed they may well have ceased or gone into reverse.

The greater importance of earned as opposed to investment income can be seen in the following table in which a moderately high total income (£1,000-1,500 per-war, £2,000-2,500 post-war) is selected for the purpose :

EARNED INCOME AT MODERATELY HIGH LEVELS OF TOTAL INCOME

	Married couples	Single men	Single women
1936–37	Total income £1,000–1,500		
Number of cases	79,866	14,814	17,768
Per cent. with earned income ..	93	81	25
Mean earned income of earners ..	£890	£790	£410
1949–50	Total income £2,000–2,500		
Number of cases	60,806	8,214	8,108
Per cent. with earned income ..	97	90	37
Mean earned income of earners ..	£1,810	£1,700	£1,210
1954–55	Total income £2,000–2,500		
Number of cases	79,970	9,131	11,138
Per cent. with earned income ..	96½	87	41½
Mean earned income of earners ..	£1,930	£1,720	£1,175

Nearly all married men at these income levels have earnings. On the average, for married earners, with a total income of £1,200 before the war, rather under £900 was earned and rather over £300 came from investment. The corresponding man, with a total income of £2,200 in 1954-55, earned about £1,900 and still had about £300 from investment. The position is much the same for single (and widowed) men at these income levels, except that there are rather more dependent completely or largely on investment income.

Considerable light is thrown by these data on the position of single (and widowed) women in the higher income brackets. In 1954-55 there were 102,000 single women with total incomes of over £1,000, compared with 97,000 single men. The numbers, though small, are not negligible. The bulk of the total income of the women comes from property, rising with income from about 70 per cent. to well over 80 per cent. This dependence on investment income is rather less than before the war (when the proportion was over 90 per cent.) but it is still very substantial. At the moderate income levels of the table above, only 40 per cent. of single women have earnings at all (25 per cent. before the war). For those who do earn, a pre-war income of £1,200 was made up of about £400 from earnings and £800 from property; even in 1954-55, a total income of £2,200 was composed of under £1,200 earned and over £1,000 from investment.

It is still true to say that, in general, a single or widowed woman has little chance of getting even into moderately high income brackets—unless she has a private income. The exceptions are rather more numerous than before the war, but feminists may well look with concern at the apparent slowness of the trend towards equality of earned income disclosed by these data.

II. Higher Earned Incomes

In any analysis of higher incomes, it is clearly desirable—certainly in the light of the data of Table I—to distinguish earned from unearned income, to divide earned income into the various types (salaries, profits, professional earnings) and to separate incomes of men from those of women. What is required, for example, is a distribution of earners according to ranges of earned income, or of male salary earners according to ranges of salary. This is difficult, indeed often impossible, from the data provided in the Inland Revenue enquiries. It is true that the numbers of taxpayers with a given type of income (e.g. salaries) are given, but classified only in ranges of total income. They are *not* shown in ranges of the type of income considered, e.g. by levels of salary. For example, in 1954-55, there are 100,239 taxpayers with total income in the range £2,000-2,500. Of these, 56,673 have salaries (mean salary £1,710) and 37,334 have profits or professional earnings (with a mean of £1,690). These two groups overlap since the same individual (e.g. a medical consultant) can have professional earnings and a salary, assessed under Schedules D and E respectively. More important, nowhere is it shown how many salary earners there are with a salary between £2,000 and £2,500, or how many there are in professional practice with earnings in this range. The problem is to get round this difficulty.

Something can be done, in the two post-war periods but not in 1936-37, about earned income as a whole as opposed to investment income. It is possible to separate out those taxpayers who have earned income (however small it may be) from those who return only investment income, and then to attempt to convert the distribution of earners by total income into a distribution by earned income.[1]

To turn the trick we have the data and estimates of Table II. In each range of total income, the Inland Revenue data give the numbers of individuals with no earned income and the numbers with all earned income, from which columns (3) and (10) of Table II are obtained. There remain the numbers with mixed (earned and unearned) income and these we need to classify according to the proportion of their income which is earned. The Inland Revenue Reports give, separately and for each year, such a classification of numbers (in a given band of total income) according to the percentage earned—but they give it only for surtax payers with total incomes of £2,000 and over. The distributions are shown for the various income ranges above £2,000 in Table II, columns (4) to (9), with minor adjustments.[2] The table is completed by estimating the corresponding distributions for each of the three or four ranges of income below £2,000. The estimates are based on the trends in the distributions as the income level rises above £2,000. There is a restriction, i.e. that the mean percentage earned must conform with the figure given in the Inland Revenue enquiries, as shown for each income range in column (2) of Table II. The estimation is confined to mixed incomes since the numbers with no and with all earned income are known at all income levels ; only columns (4) to (9) need to be estimated for total income ranges below the £2,000 point.

The interpretation of Table II is clear. For example, there are 100,200 taxpayers with total income from £2,000 to £2,500 in 1954-55 and 10½ per cent. of these have no earned income. Then, 3 per cent. have under 20 per cent. earned income, 4 per cent. have 20-40 per cent. earned income, and so on up to 37 per cent. with 90 per cent. or more earned and 17 per cent. with all earned income.

The table discloses one general but important fact. I have indicated that investment income has become relatively smaller than before the war, as is generally appreciated. At the same time—and this is not so well understood—it remains true that property income is obtained by taxpayers in all groups and at all income levels. It is by no means confined to the top income levels. As an example, take the group of 100,200 taxpayers at the moderate level of £2,000-2,500 of total income in 1954-55. Only 17 per cent. of them have no investment income and a further 37 per cent. have small investments yielding a return up to 10 per cent. of total income. So there are 46 per cent. with investment income greater than 10 per cent. of the total; they have at least £200-250 of income from investments, broadly representing a capital of £5,000 or more. Many of these are retired people with pensions ; but others have quite high earned incomes. To put the point another way : of those with earned incomes of moderate size, some have little or no property income but equally others are backed by substantial amounts of capital (whether inherited or built up themselves) from which they draw sizeable investment incomes.

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[1] The method followed here is similar to that adopted by E. C. Rhodes: " Earned and Investment Income, U.K., 1952-53," *Economica*, February, 1956. See also his article : " The Distribution of Earned and Investment Incomes in the United Kingdom," *Economica*, February, 1949.

[2] The surtax data used (e.g.) for 1954-55 are based on assessments up to mid-1956. They are not quite complete and the full information when available raises slightly the proportion of earned income. Small adjustments are made in Table II to allow for this.

From the information of Table II, it is possible to construct an estimate of the distribution of earners according to ranges of earned income in each year. These estimated distributions of earned income are shown in Table III, along with the corresponding distributions of earners by ranges of total income as given directly by the Inland Revenue enquiries. Both pairs of distributions are displayed graphically in Fig. 1 in cumulative form and on ratio scales.

I have already referred to the understatement of incomes below £2,000 because of incomplete reporting of investment income and of wife's earnings. In the Inland Revenue enquiries, adjustments are made to allow for these omissions, but only in the total income distribution for all taxpayers. Since earners form the bulk of the whole group of taxpayers, the adjustments can also be applied with fair accuracy to the distributions for earners. I have shown these adjustments in Fig. 1 and I have entered adjusted figures in Table III.

The change from 1949-50 to 1954-55 in the distribution of earned income in the higher brackets (above £1,000 in the latter year) is to be seen by looking at the shift in the curve of cumulative numbers in Fig. 1. The curve is not far from a straight line which would be the corresponding Pareto distribution. Another way of describing the change—and perhaps a simpler one—is to pick out earned incomes which are in some sense " equivalent " in the two years. The results given in the following table are obtained for each of four income levels (earned incomes of £1,500, £2,000, £2,500 and £3,000 in 1954-55) which I select for convenience :

EQUIVALENT EARNED INCOMES

Income level	1949–50 Nos. above	1949–50 Earned income	1949–50 Total income	1954–55 Nos. above	1954–55 Earned income	1954–55 Total income	% increase Earned income	% increase Total income
	000	£	£	000	£	£		
(1)	370	1,285	1,490	385	1,500	1,690	16·7	13·4
(2)	192	1,720	2,120	200	2,000	2,400	16·3	13·2
(3)	118	2,165	2,745	123	2,500	3,100	15·5	12·9
(4)	78	2,640	3,480	81	3,000	3,850	13·6	10·6

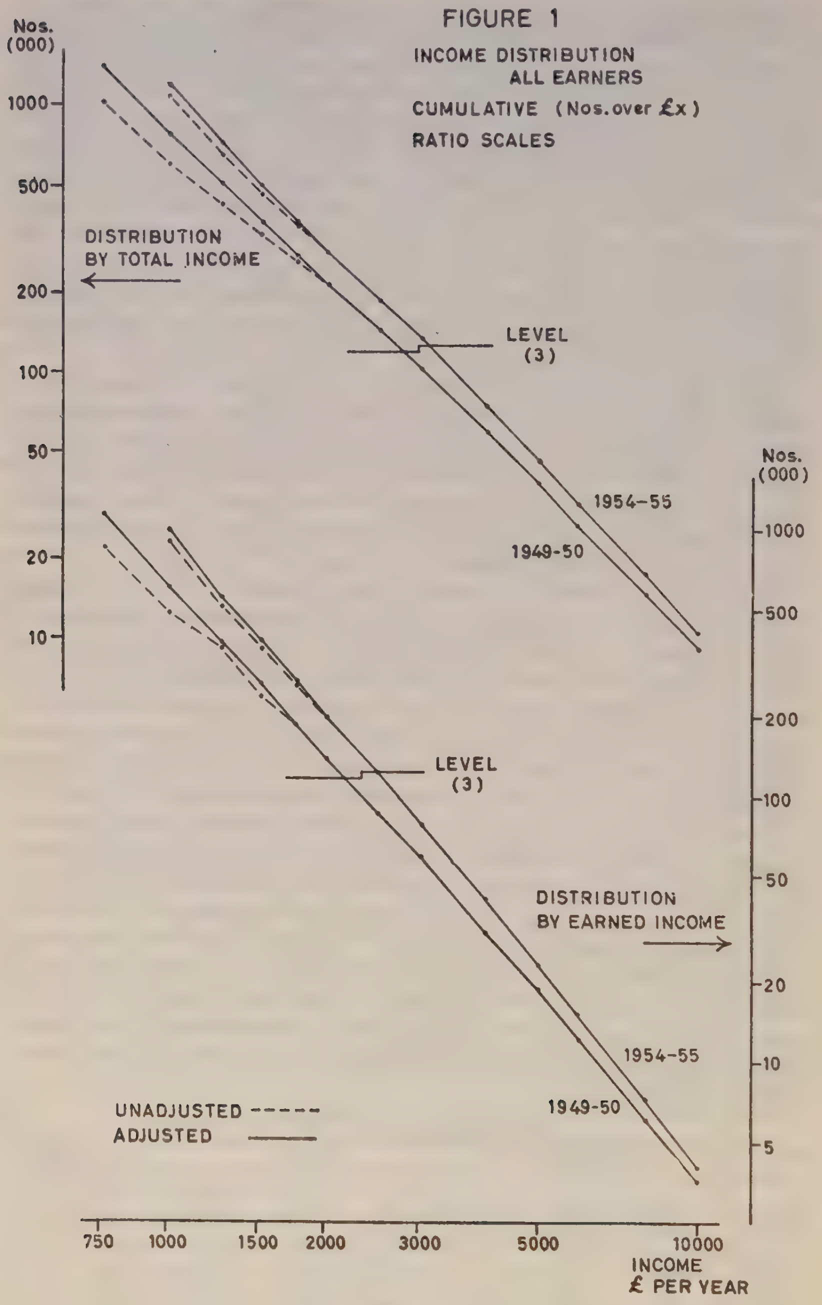

FIGURE 1

INCOME DISTRIBUTION
ALL EARNERS
CUMULATIVE (Nos. over £x)
RATIO SCALES

I can best indicate the method of defining and estimating *equivalent earned incomes* by following through the stages for one particular income level, an earned income of £2,500 in 1954-55. The process makes use of Fig. 1 on which the particular income level is marked. The number of individuals with earned incomes above £2,500 in 1954-55 is 123,000, as read off Fig. 1. Between 1949-50 and 1954-55, the working population in the U.K. increased by 4.2 per cent.[1] Hence the top 118,000 earners in 1949-50 correspond to the top 123,000 in 1954-55 ; these numbers, showing an increase of 4.2 per cent., represent the same proportion of the total group of earners in the two years. From Fig. 1, it is found that £2,165 is the earned income exceeded by 118,000 individuals in 1949-50. So £2,165 in 1949-50 and £2,500 in 1954-55 are equivalent earned incomes, the same proportion of the whole group of earners having higher earnings in the two years. It is also found from Fig. 1 that the corresponding total incomes are £2,745 in 1949-50 (118,000 cases of higher total income) and £3,100 in 1954-55 (123,000 with higher total income). The differences indicate roughly how much unearned income goes on the average with the specified earned incomes, i.e. about £600 in each year.[2]

The conclusion to be drawn from these results is that, on the basis of my definition of equivalent earned incomes, there was an increase of about 16 per cent. in earnings between 1949-50 and 1954-55. This is at the £2,000-2,500 levels of earned income in 1954-55, equivalent to about £1,750-2,150 in 1949-50. The increase is rather greater for a lower earned income level, rather less for a higher level.

The results also show in particular, what has already been established in general, that the relative amount of investment income declined in the five-year period. From 1949-50 to 1954-55, while earned income increased, the amount of property income obtained in addition to earnings remained approximately constant. The unchanged investment income was about £200, £400, £600 and £850 respectively at the four selected levels of earned income. Consequently, at equivalent levels of *earned* income, the *total* income of the earners increased less than did earned income. At the £2,000-2,500 levels (earned income in 1954-55), total income rose by about 13 per cent. as compared with 16 per cent. for earnings.

III. Higher Salaries

I have shown how the data of the Inland Revenue enquiries can be made to yield estimates of the distribution of earnings. There remains the question whether the same thing can be done for particular types of earned income, i.e. whether estimates can be derived of the distribution of salaries, of profits or of professional earnings. The answer seems to be that little is possible, at least for profits and professional earnings. These items are rather a mixed bag—including farmers' incomes, trading profits of small businesses, outside earnings of some of the professional " salariat " and the net incomes derived from professional practice—gathered together for income tax purposes under Schedule D.[1]

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[1] Obtained from Ministry of Labour estimates of the total working population in October 1949 and October 1954.

[2] This is only rough since the group of 123,000 with higher *earned* income than £2,500 in 1954-55 does not consist of exactly the same individuals as the group of 123,000 with higher *total* income than £3,100.

There is, however, the possibility of getting at least an approximate distribution of the higher salaries in each of the post-war years and also in 1936-37. This is a more homogeneous category of income, particularly for men. It has been seen that, for single women, relatively small earnings from wages and salaries are spread throughout the ranges of total income. The following estimates are, therefore, made for male salary earners, excluding the earnings both of wives and of single women.

I can describe the method proposed, and at the same time I can test it, in its application to earned incomes as a whole. The test is possible since a distribution of earned incomes is already available in Table III. In 1954-55, there were 89,600 earners in the total income group £2,000-2,500 and their mean earnings were £1,870. Because of the " tail " of low earnings (combined with high unearned income), this mean is below the median earnings of the group, about £2,050. Hence half the group, or 44,800 earners, have earnings above £2,050, and more than this number have earnings above the mean of £1,870. Further, 185,200 earners are in total income groups above £2,500 and a small number of these will also have low earnings, below £1,870. Assume that this number balances the excess (above 44,800 earners) over £1,870 in the original group. Then the number of earners with earnings above £1,870 can be fixed at 44,800 + 185,200 = 230,000, i.e. half the £2,000-2,500 group plus all the groups above £2,500. By interpolation in Table III, the number of earners above £1,870 in the earned income distribution is actually about 232,000. Similarly close results are obtained at other income levels, at least up to about £3,000. The assumption made is approximately correct and the method is valid for the group of earners as a whole, at least for incomes between £1,000 and £3,000.

It is reasonable to suppose that the method works equally well, and perhaps better, for male salary earners. Certainly the spread of salaries in any range of total income is not as great as for earnings as a whole, The Inland Revenue enquiries give both the mean salary earned in each range of total income, and also the numbers of salary earners in the given and all higher ranges of total income. Take the number of salaries above the specified mean as half the numbers in the given range plus all those in higher ranges. The resulting estimates of the distributions of salaries are plotted in cumulative form in Fig. 2, and straight lines are fitted for salaries up to £2,500 or so in 1954-55 and £1,250 in 1936-37. For these two years, the fit is quite good and the straight line can be taken, quite reasonably, as the distribution of higher salaries in each year. Numbers of salaries in various ranges can be read off, and I have entered these in Table IV.

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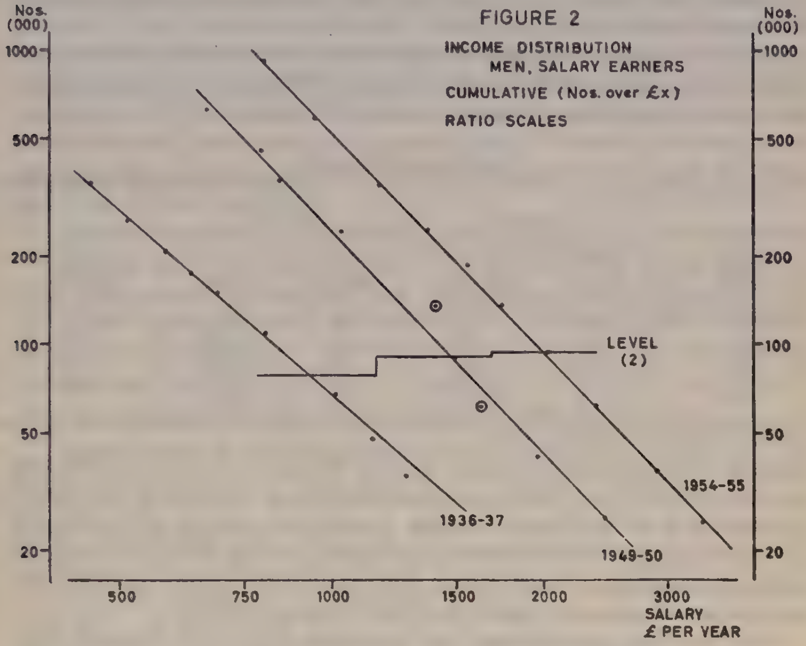
[1] Moreover, a comparison over time would be spoilt by the accident that the trading and professional earnings of wives are included in 1949-50 and excluded in 1954-55.

FIGURE 2



The fit of the plotted points to a straight line in Fig. 2 is by no means as good for 1949-50. Indeed the points in the middle ranges, around £1,500 of salary income, appear very erratic, particularly the points circled in Fig. 2. The reason seems to lie in some irregularity in the basic data. The tabulations of the Inland Revenue enquiry for 1949-50 show odd differences above and below the £2,000 point of total income. The mean salary for male salary earners is not very much higher in the total income range £2,000-2,500 than it is in the £1,500-2,000 range, i.e. £1,490 against £1,400. But investment and other non-salary income is, on the average, very different, £725 in the group above £2,000 and only £325 in the group below, An irregularity of this kind may be due to Inland Revenue practice, e.g. in checking total incomes around the surtax point of £2,000.[1]

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[1] An irregularity also appears in the 1949-50 data (but not in 1954-55), when adjustment is made for understatement of investment income and wife's earnings (see Fig. 1). This adjustment, incidentally, does not need to be made here for salary earnings. The understatement does not apply to male salaries. The distributions here derived depend only on the mean salary in a group and on the numbers in various groups. The actual amount of total income (which is affected by the adjustment) in each group is not used in the calculation.

The irregularity seems to be confined to the 1949-50 data and it implies that little use can be made of any salary distribution derived for this year. I have, therefore, written the distributions of Table IV, as obtained from the lines of Fig. 2, only for 1936-37 and 1954-55. All that can be said of the salary distribution for 1949-50 is that there seems to have been a quite large and fairly uniform percentage increase between 1949-50 and 1954-55.

I show in the following table equivalent salaries in the pre-war and post-war periods; I obtain them on the same definition and by the same method as I have already used for earned income :

EQUIVALENT SALARIES

Salary level	1936–37 Nos. above	1936–37 Salary	1954–55 Nos. above	1954–55 Salary	% increase
	000	£	000	£	
(1)	161	655	192	1,500	129
(2)	78	925	94	2,000	116
(3)	44	1,220	53	2,500	105

I select three salary levels for convenience, i.e. £1,500, £2,000 and £2,500 in 1954-55. I show the determination of equivalent salaries at the middle level in Fig. 2. In this, I need the percentage increase in the number of male salary earners in the period from 1936-37 to 1954-55, and I estimate this at 20 per cent.[1] Hence, the numbers above equivalent salaries are 20 per cent. higher in 1954-55 than in 1936-37.

Only cautious conclusions can be drawn about the changes since pre-war in the distribution of higher salaries. They are dependent on the validity of the method used for deriving the distributions and they are limited by the fact that no reliable distribution can be obtained for the intermediate year 1949-50. The percentage increase in salaries, from 1936-37 to 1954-55, tapers off as the salary level rises, from about 130 per cent. at the 1954-55 salary level of £1,500 to rather over 100 per cent. at the £2,500 level. The evidence (such as it is) seems to be that, between 1949-50 and 1954-55, salaries increased fairly uniformly and by an amount larger than the 16 per cent. increase in earned income as a whole.

IV. CONCLUSIONS

All the evidence points to the fact, which is quite generally appreciated, that investment income forms a smaller part of total income in the post-war period than before the war (Table 1). This decline continued in the five years from 1949-50 to 1954-55, though it may have been arrested since then. On the other hand, it is still true that all kinds of people at all income levels have sizeable amounts of invested income. Certainly, income from property is not confined to any particular groups, e.g. those with very high incomes. In the total income range of £2,000-2,500—no more than moderately high—46 per cent. of all taxpayers have over 10 per cent. of their incomes in the form of return on capital ; they have at least £200-250, and often more, of unearned income (Table II). Some of those with a substantial proportion of investment income are retired or otherwise living on private means but others are in active stages of their lives and have considerable earnings. There are still many with both high earnings and large capital holdings.

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[1] The increase in male salary earners is estimated at 16 per cent. from 1938 to 1951, comparing the 1951 Census figures with those of Chapman for 1938. See Royal Commission on the Civil Service, *Minutes of Evidence*, 7th Day (24 May, 1954), p. 184. The increases from 1936-37 to 1938 and from 1951 to 1954-55 are both small, not more than 2 per cent. each.

Distributions of earners according to ranges both of total income and of earnings can be derived from the data published by Inland Revenue from their post-war enquiries into personal incomes (Table III). If equivalent earned incomes at two dates are defined as those exceeded by the same proportion of the total group of earners, then the increase in equivalent earnings is about 16 per cent. from 1949-50 to 1954-55. This is at the £2,000-2,500 level of earned income in 1954-55.

The decline in the relative importance of investment income can be made more specific. While earned income was increasing between 1949-50 and 1954-55, the additional income derived by earners from their private property remained almost constant. A man earning £2,000 in 1954-55 had in addition about £400 of investment income on the average; one with £2,500 of earned income had about £600 from property. Over the previous five years, while earnings rose by 16 per cent., these investment incomes had scarcely changed.

With more difficulty, and as an approximation, it is also possible to derive distributions of male salary earners according to ranges of salary income, both for 1936-37 and for 1954-55 (Table IV). The movement of equivalent salaries—equivalence having the same connotation as before—illustrates the " concertina " effect of reduced differentials. At the £1,500 salary level in 1954-55, the increase in salary over pre-war was about 130 per cent. ; at the higher level of £2,500, the increase was a little over 100 per cent. Apparent deficiencies in the basic Inland Revenue data prevent a similar calculation for 1949-50. The indications, however, are that salaries increased fairly uniformly, and by more than the 16 per cent. found for total earnings, between 1949-50 and 1954-55.

I would conclude with a plea that Inland Revenue should give more information on income distributions in their special enquiries into personal incomes, if necessary at the expense of the detail of regional and other analyses now provided. We have had, for some time, good estimates from Inland Revenue of the distribution of all personal incomes according to ranges of total income. We have no direct information on the distributions of particular types of income, e.g. of salaries by ranges of salary, of professional earnings by ranges of such earnings or of investment incomes by ranges of such income. Even in the detail now provided by Inland Revenue, when the number of cases of wages and salaries and the number of cases of profits and professional earnings are shown, we have no indication of the extent of overlap between the two groups or of the amounts of investment income obtained by either group in addition to earnings. It may well be that the punched-cards now used in the special enquiries of Inland Revenue do not contain the necessary detail of (e.g.) individual salary earnings. But it must be possible so to organise the enquiries that such detail can be obtained and punched, and the corresponding income distributions tabulated. There is great interest in, and use for, distributions of various types of income ; the obvious source of the information is the series of special enquiries made by Inland Revenue.

The London School of Economics.

TABLE I

TOTAL INCOME, DISTRIBUTED BY TYPE, U.K.

Percentages of total income, at certain income levels.

A. 1936–37

Income level	Married Men			Single Men			Single Women		
	£500 –600	£1,000 –1,500	£2,000 –2,500	£500 –600	£1,000 –1,500	£2,000 –2,500	£500 –600	£1,000 –1,500	£2,000 –2,500
Profits, professional earnings	20	26	25	17	20	18½	7	4½	3
Wages, salaries, subsidiary earnings[1] . .	61	42	32	52½	33	24½	13	4	2½
Wife's earnings	2	1	*	—	—	—	—	—	—
nvestment income . .	17	31	43	30½	47	57	80	91½	94½
Total income . .	100	100	100	100	100	100	100	100	100

B. 1949–50

Income level	Married Men			Single Men			Single Women		
	£1,000 –1,500	£2,000 –2,500	£4,000 –5,000	£1,000 –1,500	£2,000 –2,500	£4,000 –5,000	£1,000 –1,500	£2,000 –2,500	£4,000 –5,000
Profits, professional earnings[2]	26–	38	36	30–	38	35	14–	14	7
Wages, salaries	51–	34	29	41–	27	20	14–	5	4
Subsidiary earnings[1] . .	7	3½	3½	5	3	2½	1	1	*
Wife's earnings[3] . .	4+	2½	1½	—	—	—	—	—	—
nvestment income . .	12+	22	30	24+	32	42½	71+	80	89
Total income . .	100	100	100	100	100	100	100	100	100

C. 1954–55

Income level	Married Men			Single Men			Single Women		
	£1,000 –1,500	£2,000 –2,500	£4,000 –5,000	£1,000 –1,500	£2,000 –2,500	£4,000 –5,000	£1,000 –1,500	£2,000 –2,500	£4,000 –5,000
Profits, professional earnings	16–	30	31	24–	27	34	11–	9½	10
Wages, salaries	65–	47	36	55–	38	24	20½–	12½	6
Subsidiary earnings[1] . .	2	2	1½	1½	2	1	1½	*	*
Wife's earnings	10½+	5	3½	—	—	—	—	—	—
nvestment income . .	6½+	16	28	19½+	33	41	67½+	78	84
Total income . .	100	100	100	100	100	100	100	100	100

* Less than 0·5 per cent.

[1] Under Schedule E, including family allowances.

[2] Earnings of man and/or wife (for married couples).

[3] Schedule E earnings of wife only.

TABLE II

PROPORTION OF INCOME EARNED, ALL TAXPAYERS, U.K.

Income level	Number of tax-payers	Proportion of income earned	No income earned	Mixed income (per cent. earned)						All income earned
				Under 20	20–	40–	60–	80–	90–	
	(1) 000	(2) %	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
			Per cent. of all in income group							
A. 1949–50										
£750 –	617·6	91·3	5	1	½	1	1	5	52½	34
1,000 –	295·8	83·1	8	3	2	3	6½	10	48½	19
1,500 –	122·7	77·8	10	4	2½	4	9	12	47	12
2,000 –	77·1	72·1	10	6	4	6	11½	14	41	7½
2,500 –	44·5	69·0	10½	7	4½	8	14	14	36	6
3,000 –	48·0	66·1	11	7½	6	8½	15	14	33	5
4,000 –	22·9	62·5	11½	9	7	11	15	13	30½	3
5,000 –	13·2	60·6	10	11	9½	11½	15	12	29	2
6,000 –	13·4	57·5	12	12	10½	11½	13½	12	26	2½
8,000 –	6·4	54·9	12	14	11½	11½	14	11	24	2
10,000 –	10·2	48·0	11½	20	13	10½	12	9½	19½	4
B. 1954–55										
£1,000 –	456·1	89·9	4	1	1	2	5	9	30½	47½
1,250 –	197·7	84·6	7	1½	2	3½	6	10	34	36
1,500 –	120·8	81·8	8	2	2½	4	7	11	36	29½
1,750 –	76·7	79·1	9	2½	3	4½	8	11½	34½	27
2,000 –	100·2	75·4	10½	3	4	5	10½	13	37	17
2,500 –	60·3	72·9	11½	3	4	6	15	15	33	12½
3,000 –	65·9	67·4	13	4	5	9	17	16	32	4
4,000 –	32·7	65·9	14	4½	6	10	16½	15½	31	2½
5,000 –	17·6	61·0	16	4½	8	12½	16½	13½	28½	½
6,000 –	17·6	56·4	19	4½	10	12½	16	13	24	1
8,000 –	8·1	55·0	14	11	11½	12½	15½	11½	23½	½
10,000 –	12·5	46·5	19	15	13	11	13	9	17	3

TABLE III

INCOME DISTRIBUTION, ALL EARNERS, U.K.

Income	Nos. (000) in ranges of total income		Nos. (000) in ranges of earned income	
	1949–50	1954–55	1949–50	1954–55
£750 –	620·1	...	561·6	...
1,000 –	258·1	498·1	233·0	446·8
1,250 –	143·9	208·2	123·7	184·0
1,500 –	86·0	132·8	75·8	114·0
1,750 –	57·5	80·9	49·5	71·7
2,000 –	69·4	89·6	53·5	78·0
2,500 –	40·0	53·4	28·1	41·8
3,000 –	42·6	57·5	28·4	39·5
4,000 –	20·3	28·2	12·3	17·5
5,000 –	11·9	14·8	6·4	8·4
6,000 –	11·8	14·2	6·3	7·8
8,000 –	5·6	6·9	2·5	3·1
10,000 –	9·0	10·2	3·6	3·9

Note.—The distributions have been adjusted, in the ranges under £2,000, for understatement of wife's earnings and of investment income.

TABLE IV

DISTRIBUTION OF HIGHER SALARIES, MEN, U.K.

Numbers (000) in ranges of salary income

1936–37		1954–55	
Salary	Nos. (000)	Salary	Nos. (000)
£ 500 –	160	£1,000 –	223
750 –	58	1,250 –	103
1,000 –	22	1,500 –	62
1,250 –	13	1,750 –	36
1,500 –	29	2,000 –	41
		2,500 –	19
		3,000 –	34

Note.—The distributions are estimated from the lines fitted to the data in Fig. 2.

Some Strange 'Marriages' Between the Income-Expenditure Lag and Variable Prices

By John Spraos

If economic theorising is not to degenerate entirely into irrelevant puzzle-solving, the premises and assumptions of each author must be submitted to as critical a scrutiny as that applied to the logic of his deductions from them. Constant vigilance is necessary, for it is unfortunately a fact that the most innocuous-looking assumption may conceal economic nonsense of a high order. The purpose of this note is to draw attention to instances where such unsuspected concealment has occured. They are all taken from macro-models which have attempted to combine an income-expenditure lag with variable prices. The discussion is divided in two parts, one relating to the lag structure of the aggregate expenditure function, and the other to the lag structure of expenditure functions for individual goods.

Lagged demand reactions play such an important part in " dynamic " economics that the rationale of the lags that are being postulated always merits the closest attention.

A preliminary matter must be put out of the way first. In Professor Metzler's classification and terminology there are three lags : the " output lag ", the " earnings lag ", and the " consumption lag "[1]. Professor Hicks has rightly insinuated that in certain circumstances all three lags can be formally subsumed under one and the same mathematical expression[2]. This would have raised problems of interpretation were it not for the fact that in the cases to be reviewed here there is internal evidence which rules out the output and earnings lags, leaving the field clear for the consumption lag. The principal explanation for the latter is the stickiness of living standards which interposes a delay between changes of income and induced changes in aggregate consumption[3].

I

Three articles—by Professor W. F. Stolper[4], Mr. W. Beckerman[5], and Mr. A. Ll. Wright[6]—provide the material we shall work on. For various good reasons the writers under review have chosen to work with money expenditure functions instead of real demand functions. This in itself is perfectly legitimate ; it is the shape they have given to their expenditure functions which is open to serious criticism. Reversing the chronological order we shall select for closer examination the aggregate expenditure function postulated by Mr. Wright, for it represents the general case of which the other two are, as we shall see, but special instances.

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[1] L. A. Metzler, "Three Lags in the Circular Flow of Income," in *Income, Employment and Public Policy: Essays in Honor of A. H. Hansen*, W. W. Norton, New York, 1948, pp. 11–32.

[2] J. R. Hicks, *A Contribution to the Theory of the Trade Cycle*, Clarendon Press, Oxford, 1950, pp. 52–55.

[3] L. A. Metzler, *op. cit.*, p. 16.

[4] "The Multiplier, Flexible Exchanges, and International Equilibrium," *Quarterly Journal of Economics*, Vol. LXIV (1950), pp. 559–82.

[5] "Price Changes and the Stability of the Balance of Trade," *Economica*, New Series, Vol. XIX (1952), pp. 408–14.

[6] "The Interaction of the Multiplier and Price Mechanisms," *Economica*, New Series, Vol. XXII (1955), pp. 318–28.

Mr. Wright postulates that today's aggregate money expenditure (E_t) is a function of yesterday's money income (Y_{t-1}) and today's general price level (p_t). In symbols his expenditure function[1] therefore reads :

$$E_t = E^* (Y_{t-1}, p_t) \quad \ldots\ldots\ldots\ldots (1).$$

(The asterisk is used here and elsewhere to distinguish between functional expressions with a family relationship but not identical.)

At first sight (1) has an air of sweet reasonableness about it. But this is very deceptive ; in actual fact it harbours behaviour of stark irrationality. Avoiding technicalities, this may be shown by resorting to an argument along largely intuitive lines.

This takes the form of demonstrating that the apparently harmless shape of (1) is compatible with seriously aberrant behaviour, whilst it is incompatible with behaviour obtained by removing the aberration. Consider, then, the following real demand function :

$$D_t = D^*\left(\frac{Y_{t-1}}{p_t}\right) \quad \ldots\ldots\ldots\ldots (2)$$

(where D_t is today's real demand). By definition $E_t \equiv p_t D_t$, whence from (2)

$$E_t = p_t D^*\left(\frac{Y_{t-1}}{p_t}\right) \quad \ldots\ldots\ldots\ldots (3).$$

Since Y_{t-1} and p_t are the only independent variables appearing on the right hand side of (3), it follows that (3) can in fact be written in the functional form of (1). Thus it is clear that (1) is, *inter alia*, the monetary expression of (2).

But observe that what (2) says is that today's real demand depends on *yesterday's* money income deflated by *today's* price. Consider the following illustration of what this implies. After a spell of stability in periods *t-n*, ... , *t*-1, let price and money income double in period *t*. Since it is income in *t*-1 that influences consumption in *t*, the latter will remain unaffected by the doubling of income. The doubling of price on the other hand produces its effect immediately. Used as a deflator of yesterday's money income it yields an imaginary halving of one's real income. In consequence, today's real consumption is reduced by half one's initial real income (which is imagined lost) multiplied by the marginal propensity to consume. If the latter is put at 0.8, this means a cut of real consumption of at least 40 per cent. (unless one had been dissaving initially) notwithstanding that the rise of money income in t has fully compensated for the doubling of price.

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[1] "The Interaction of the Multiplier and Price Mechanisms," *Economica*, New Series, Vol. XXII (1955), p. 327.

This is, of course, absurd. When the absurdity is removed the real demand function takes the form

$$D_t = D\left(\frac{Y_{t-1}}{p_{t-1}}\right) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4),$$

which accurately reflects the consumption lag hypothesis by making today's real demand dependent on yesterday's real income in the proper sense of the term. But now (1) cannot serve as the monetary expression of (4). For

$$E_t \equiv p_t D_t = p_t D\left(\frac{Y_{t-1}}{p_{t-1}}\right),$$

which, written in the form of an expenditure function, reads

$$E_t = E\,(Y_{t-1}, p_t, p_{t-1}) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5).$$

This is in fact an aggregate expenditure function which (subject to standard sign restrictions on partial derivatives) makes sense in terms of consumer behaviour hypotheses, as against (1) which does not.

The aggregate expenditure functions postulated by Professor Stolper and Mr. Beckerman are open to the same objection as that advanced against (1), since they are but special cases of the latter. Professor Stolper's aggregate expenditure function[1] differs from (1) only in having in it the price level of imports (p') in place of the general price level (p). But since he assumes that all prices other than those of imports are constant, changes in p and p' differ (in the neighbourhood of the initial position) only by a scale factor, which is immaterial.

The aggregate expenditure function adopted by Mr. Beckerman[2], on the other hand, takes the form :

$$E_t = cY_{t-1} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6).$$

That this is a special case of (1) is self-evident. But what is more, it can be readily seen to be the monetary expression of a real demand function which is a special case of (2). For, by dividing both sides of (6) by p_t[3] we obtain

$$\frac{E_t}{p_t} \equiv D_t = c\,\frac{Y_{t-1}}{p_t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7).$$

If (2) is absurd, then (7) is absurd *a fortiori.*

The upshot of it all is that (1), or special cases thereof, will not do. The aggregate expenditure function which conforms to the minimum requirements for a legitimate coexistence of a consumption lag with variable prices is (5)[1]. One may sympathise with the desire for simplicity which may have dictated the choice of (1), but one can hardly let pass a hypothesis which implies all-round consumer schizophrenia. Nor, unfortunately, can one say that it does not much matter anyway, for the time paths generated by any given model can be highly ' sensitive ' to even small changes in its lag structure.

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[1] He does not state it explicitly, but it can be pieced together from the expenditure functions he postulates for each of the two goods of his model. See W. F. Stolper, *loc. cit.*, p. 570.

[2] *Loc. cit.*, p. 410.

[3] p must be understood here as the weighted average of Mr. Beckerman's two prices, one for imports and the other for home goods,

II

In this section we continue our main theme but with reference to expenditure functions for individual goods.

Mr. Wright drops out here because he operates throughout at the highest level of aggregation, allowing, in effect, for only one commodity in his model. Professor Stolper, on the other hand, allows for two goods, one made at home and the other imported, but we must part company with him too. For we are here concerned with problems arising from the lag structure of the expenditure functions for individual goods, and such problems cannot be easily isolated if the functions in question suffer from a serious flaw, as Professor Stolper's do,[2] even when all their lags are dropped[3].

This leaves us with Mr. Beckerman. His model, like Professor Stolper's, allows for two goods. But in the present context their actual number does not matter so long as there are more than one of them. We shall, therefore, conduct the discussion on the general basis of n goods, where n can be any integer greater than one. The significance of the number of goods being in excess of one is, of course, that only then does the question of allocating aggregate expenditure between different goods arise.

The concept of the general price level with which we have worked hitherto has obviously got to go. It was not too unsatisfactory so long as we were concerned with the determinants of aggregate expenditure. But now we consider expenditure functions for individual goods, and here the allocative rôle of individual prices is paramount. Instead of p we shall need the full range of individual prices : $p_1, \ldots\ldots, p_n$.[4]

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[1] Observe, incidentally, that (5) can serve as the monetary expression of a more general aggregate real demand function than (4), one which allows, for example, for a lagged Pigou effect as in

$$D_t = D\left(\frac{Y_{t-1}}{p_{t-1}}, p_{t-1}\right)$$

[2] See W. H. White, " The Multiplier, Flexible Exchanges, and International Equilibrium : Comment," *Quarterly Journal of Economics*, Vol. LXVII (1953), pp. 136–41.

[3] The aggregate expenditure function implicit in Professor Stolper's model is, however, free of any flaws when unlagged, hence the examination of its lagged version in the previous section presented no difficulties.

[4] We can, needless to say, rewrite (5) on this basis to read :

$$E_t = E\,(Y_{t-1}, p_{1t}, \ldots, p_{nt}, p_{1,t-1}, \ldots, p_{n,t-1}) \ldots\ldots\ldots\ldots \quad (5')$$

Clearly, today's expenditure on the *i*th good (E_{it}) is related to aggregate expenditure and to the prices of the *i*th and other goods. What is of interest, however, is Mr. Beckerman's dating of the price variables. For he plumps, in effect, for the following functional relationship :

$$E_{it}=E_i^*(E_t, p_{1,t-1}, \ldots, p_{n,t-1}) \quad (i=1, \ldots, n).$$

What this says is that, given the total amount to be spent today, so much of it is allocated to the *i*th commodity (as against the *j*th, etc.) not on the basis of the prices at which each commodity is purchased but on the basis of those ruling yesterday.

Surely this is very strange? When I go to a second-hand bookshop I do not ask what prices were charged yesterday for the various books I fancy. This is, as far as I am concerned, irrelevant history; what matters in weighing the merits of buying the books as against those of, say, a new shirt, is the prices charged today. For repetitive purchases I might maintain out of some perverse habit[1] yesterday's allocation of expenditure between x and y even if their relative prices have changed today, but when I come to re-allocate my expenditure tomorrow I will do so on the basis of tomorrow's prices, not today's. In short, it is *current* prices which, on any reasonable hypothesis, influence the *allocation* of expenditure between goods, and expenditure functions for individual goods must be of the form

$$E_{it}=E_i(E_t, p_{1t}, \ldots, p_{nt}) \quad (i=1, \ldots, n) \ldots\ldots\ldots\ldots (8)^2.$$

When money expenditure and all prices other than the *i*th are taken as constant we have as a special case of (8)

$$E_{it}=E_i(p_{it}) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (9),$$

which is the monetary expression of the normal unlagged demand function that, on being combined with a lagged supply function, yields the " cobweb " cycle.

This brings us to the end. Having struck a highly critical note throughout, it would not be right to conclude without at least pointing out that the criticised expenditure functions have such a plausible appearance that they can mislead anybody into overlooking their flaws. Take (1) for example. It does look as if it constitutes a generalisation of two well established partial postulates : (a) that, given constant prices, today's expenditure depends on yesterday's money income ; and (b) that, given constant money income, the demand for any commodity reacts to a change in its price without a lag (as in (9)). The catch in combining them should not now be difficult to see in the light

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[1] " Perverse " because they would not be related to the real goods, but to the money expenditures thereon.

[2] Using (5′) we can rewrite (8) as follows :

$$E_{it}=E_i(Y_{t-1}, p_{1t}, \ldots, p_{nt}, p_{1,t-1}, \ldots, p_{n,t-1}).$$

But note that

$$E_{it}=E_i^*(Y_{t-1}, p_{1t}, \ldots, p_{nt})$$

would be wrong, for it could only be arrived at from (8) through using some such aggregate expenditure function as (1) or (6), and would therefore carry over their defects.

of what has been said so far. The case for (b) rests fundamentally on the allocative rôle of prices, and is therefore unchallengeable on a micro-level. But carrying it over *tel quel* to the macro-level of (*a*), where the problem relates to the determination of aggregate expenditure and not to its allocation between goods, can be a very different matter. Still, this cannot be said to be immediately obvious, and it is to obviate the risk of such things recurring that it was thought worth while dwelling on this subject at some length.

University of Sheffield.

A Note on Mr. Spraos's Article

By A. Ll. Wright

The first part of Mr. Spraos's article presents a challenging criticism to my attempt at a mating[1] while at the same time he questions the sanity of the offspring. He maintains, in the first part of his article, more or less as Mr. Alexander does in the article that I cited,[2] that real expenditure depends upon real income. His second equation is, apparently, based on this hypothesis, but it raises the whole problem of the money illusion.

Given that demand depends upon *real* income, then the absence of money illusion implies that the quantity of commodities demanded is entirely independent of *money* income and of prices (assuming that relative prices remain constant). If this is not so, some assumptions regarding the size of the effect of the money illusion must be introduced. The difficulties presented by this method of approach can, I think, be avoided by a more realistic, and at the same time simpler, attack. If prices are constant, any change in money income must, at the same time, be an identical change in real income and no problem arises. On the other hand, if prices vary, the change in money income must be deflated by a price index and the resulting change in real income thus calculated can be used as the basis for a multiplier analysis. This method is open to quite a few objections, apart from the weighting problem of constructing a suitable index, particularly when *relative* prices are not constant. It is impossible for each individual to calculate the changes in his real income (when related to the changes in real expenditure) *ex ante*. Consequent upon a change in his money income, the quantity of each commodity which an individual buys depends on its absolute (and relative) price change, so that he cannot discover the change in his own *real* income until *after* he has actually purchased the various commodities upon which he expends the change in his money income. In other words, only *ex post* has a change in real income any meaning for him, and it is then the *result* of his pattern of spending and not the *cause* of this pattern. I would maintain, then, that a representative individual does not think in terms of (changes in) his *real* income, but in terms of (changes in) his money income *and* of (absolute and relative[1] changes in) the prices that confront him.

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[1] See A. Ll. Wright, "The Interaction of the Multiplier and Price Mechanisms," *Economica*, N.S. XXII (1955), pp. 318-28.

[2] S. S. Alexander, "The Accelerator as a Generator of Steady Growth," *Quarterly Journal of Economics*, LXIII (1948), pp. 174-97.

If this argument is accepted it is logical to think of changes in expenditure in terms of a lagged money income effect and an instantaneous price effect.[2] It follows, then, that Mr. Spraos' third equation,[3] which relates the expenditure of any period to the product of the current price-level and the quotient of the money income of the previous period and the current price-level forms no part of my system. *I have nowhere deflated any money magnitude.*[4]

As a matter of fact, it is easy to show that lags[5] do not form a necessary part of my analysis at all. In the general case, every individual's consumption period is of different length and timing: although each individual has a discontinuity in the receipt of his own income and its expenditure, when averaged over all individuals in an economy the income-expenditure discontinuity is replaced by continuity.[6] Equation (11) of my system[7] thus becomes

$$dE_t = adY_t + \frac{1+\epsilon}{1+\eta} dE_t = adY_t / \left(1 - \frac{1+\epsilon}{1+\eta}\right) \equiv AdY_t \ldots\ldots\ldots (1)$$

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[1] It is when *relative* prices are not assumed constant that the real income approach offers the greatest difficulty: the money income approach, on the other hand, can easily cope with the problem in so far as a single price-level can be replaced by many prices and the single price coefficient by a matrix of such coefficients.

[2] Cf. Section XII of R. F. Kahn's "The Relation of Home Investment to Unemployment," *Economic Journal*, XLI (1931), pp. 173-98, where a method of approach almost identical to mine on this point is adopted.

[3] It seems rather peculiar that Mr. Spraos attacks my system by introducing on the demand side a lag into prices and then appears to attack Mr. Beckerman by removing from the demand side the lag in prices (p. 156, above).

[4] Mr. Spraos's proof showing that my analysis depends on " behaviour of stark irrationality " would appear to me to be based on an argument from the particular to the general and would seem, therefore to be illogical. His third equation, $E_t = p_t D^* (Y_{(t-1)}/p_t)$, is a *particular* form of my *general* function $E_t = E(Y_{(t-1)}, p_t)$, just as the equation which is the immediate basis of my system, $dE_t = E_y dY_{(t-1)} + E_p dp_t$, is also a *particular* form of the same *general* function. However, there is no *a priori* reason why the increased connotation of either of the particular forms should limit the denotation of the general form in the same way. This, in fact, is the case: each of the particular forms does not apply to the same type of behaviour.

[5] One difficulty in my lagged model lies in my confusion of the output lag and the expenditure lag. It may well be irrational to assume that, on the supply side, price rises are determined by *current* expenditure rather than by *past* expenditure. This problem, which can be overcome in a single commodity model by utilising slopes rather than elasticities, can be obviated by dropping the lags altogether.

[6] Cf. A. W. Phillips, " Stabilisation Policy in a Closed Economy," *Economic Journal*, LXIV (1954), p. 291.

[7] See A. Ll. Wright, *loc. cit.*, p. 327. I use the symbol " *a* " here in place of the " *e* " in the original article to avoid confusion with " *e* " the base of Naperian logarithms used in the text of this " Note ".

If the coefficients are assumed constant and both expenditure and income are assumed to be zero at $t = o$, it follows that

$$E = AY \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

and the leakage out of the system at any point of time is $(1 - A)Y$. Suppose X is the constant exogenous injection into the system at any point of time in money terms: assuming a continuously repeated injection, then the *total* injections up to time[1] t are given by $\int_o^t X.dt$. If there were no leaks out of the system the value of this integral (i.e., tX) would be income at time t. But the *total* leaks out of the system up to time t are given by $(1 - A)\int_o^t Y.dt$. The difference between the two must be income at time t, i.e., Y. Hence

$$Y = \int_o^t X.dt - (1 - A)\int_o^t Y.dt \quad \ldots\ldots\ldots\ldots \quad (3)$$

or

$$\frac{dY}{dt} + (1 - A)Y - X = o \quad \ldots\ldots\ldots\ldots \quad (4)$$

with a solution

$$Y = \frac{X}{1 - A}(1 - e^{-(1-A)t}) \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (5)$$

since, when $t = o$, $Y = o$. This equation shows, of course, that the system is stable if $A < 1$. The asymptotes of (5) and of my original equation (15) are identical: the time path of the former, however, lies slightly to the right of the time path of the latter. In fact (5) can be regarded as giving the income time path for equation (15) of my original model when the discontinuity represented by each period is reduced to zero.

The approach to the multiplier analysis based on real income changes which Mr. Spraos advocates can be regarded as an alternative to my own approach. It necessitates, however, the explicit introduction of a factor to take account of the effects of money illusion. Further, it becomes extremely dufficult, if not impossble, to handle a general system of n commodities having different proportional price rises, with the real income approach. Finally, Mr. Spraos' approach presents what may be a difficulty from some points of view in that no direct solution in terms of income and expenditure, in contrast to a solution in terms of real quantities, is obtainable. The method I have adopted is certainly easier to handle and I would claim for it that it is based on more realistic assumptions.

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[1] Assuming that the velocity of circulation per period is unity: cf. R. G. D. Allen, *Mathematical Economics*, London, 1956, p. 53, Ex. 4.

A Rejoinder

By John Spraos

(1) Mr. Wright says that I have advocated an approach in real terms against his own which is in money terms. But there is no such advocacy. What there is is quite different: an attempt to bring into the open the behaviour implications in real terms of a functional relationship expressed in money terms. But, anyway, how does the argument about the superiority of money aggregate demand functions help Mr. Wright, when his own standard practice is to break up the money magnitudes with which he starts off into their price and volume components ? Note, for example, that his symbol ϵ is the elasticity of a curve relating the *volume* of demand to price.

(2) In the third paragraph of his Note Mr. Wright denies that my relationship (3) has anything to do with his system. Hence all criticism based on that relationship is irrelevant. In a footnote attached to the same paragraph, on the other hand, he accepts the contention that the relationship in question is but a special case of his own expenditure function. But now he claims that it has nothing to do with his expenditure function in its *differentiated* form. In lieu of comment on the remarkable logic of this, it might be pointed out that the only way to limit the scope of a functional relationship, which in its most general form harbours absurd implications, is to place restrictions on it. What restrictions, if any, Mr. Wright has in mind he does not say. But it cannot be the standard ones on the signs of the partial derivatives, because, under these, the case represented in equations (2) or (3) of my article is far from atypical of the behaviour pattern implicit in Mr. Wright's expenditure function.

(3) The model which Mr. Wright presents in the latter part of his Note is naturally free from the criticisms advanced against his original lag structure, since it contains no lags. Unfortunately this must not be taken as an endorsement of Mr. Wright's new version which is unsatisfactory in other respects. One source of trouble is that Mr. Wright postulates a supply relationship which links price to *ex ante* expenditure (cf. appendix of his original article). Now, the supply curve as normally understood relates price to the planned volume of sales, or, in the monetary terms which Mr. Wright prefers, price to planned sales revenue. In stationary equilibrium, or in the equilibrium ruling within each period of Mr. Wright's original model, *ex ante* expenditure and planned sales revenue are equal—so all is well. But what is the meaning of a supply relationship linking price to *ex ante* expenditure when, as in the new model (cf. equation (4), p. 161, above) the very force propelling the system through time is a discrepancy between *ex ante* expenditure and planned sales revenue ? To ask but one of many questions: such a supply relationship presupposes that sellers have full knowledge of the aggregate demand function; do they employ, then, supereconometricians whose *statistically estimated* function coincides down to the last detail with the *actual* demand function ?

Book Reviews

Studies in the Labour Theory of Value. By R. L. Meek. Lawrence & Wishart. 1956. 310 pp. 30s.

In his new book Mr. Meek sets himself a two-fold objective, the first being to give an historical survey of the rise and roles of the labour theory of value, in particular of its part in the systems of Smith and Ricardo, and its fulfilment in Marx. For two-thirds of the book Mr. Meek is conducting us through this territory with much learning, analytical acumen, and academic competence, though he is often highly controversial both in his central thesis and on points of detail. But, of course, Mr. Meek has not simply contented himself with, or regarded himself as delivering, a purely historical monograph. The real crux and point of his book lies in his *second* and much more original objective—related to the first and of which he makes a great deal in his Preface, that of demonstrating that the Marxian labour theory is " good science today" (p. 7), and can be re-applied as a vital tool for the understanding of " monopoly capitalism " and the Soviet socialist economy.

However, Mr. Meek does not get down to this crucial task of his until the last two sections of his last chapter. For after his account of Marx, Mr. Meek includes a long chapter dealing with a miscellaneous selection of critics, including Pareto, Bernstein, Croce, and Joan Robinson (but not Schumpeter). Here Mr. Meek never once admits that any critic has ever scored a single point against Marx on any subject whatsoever, and as regards the recent literature he concludes that " the average standard of Marx-criticism, both in academic circles and elsewhere, is quite extraordinarily low " (p. 240). Incidentally, this stern pronouncement seems to cast a shadow on the hopes which Mr. Meek, in a more expansive vein, raises in his Preface, to the effect that his book " may play a small part in helping to usher in a period of coexistence between the two groups [of Marxist and non-Marxist economists] in which accusations of dishonesty and academic incompetence will be replaced by genuine attempts to understand and evaluate one another's point of view " (p. 8).

We only come, then, in the last 40 pages of the book (p. 256 ff.) to the " re-application " of the Marxian labour theory to the Soviet socialist economy and to monopoly capitalism, and to the demonstration that it is " good science today " and points the way " out of the barren desert " of modern economic theory (p. 256). As, apparently, from Mr. Meek's account, no one has ever tried to adapt the Marxian labour theory to " monopoly capitalism ", Mr. Meek himself seeks to fill the void in a few concluding pages in which we get a very brief sketch of what seems to amount to an ultra-historicist classification of three different " stages " of capitalism—" transitional ", " competitive ", and " monopoly "—in which prices will diverge from " values " in different ways and degrees. One cannot help suspecting that if Mr. Meek really had felt that this historicist classification was going to get us anywhere much, he would have given it more of a chance than it gets in its very few pages right at the end of the book.

In the preceding section on " The Operation of the Law of Value under Socialism " Mr. Meek discusses what is, according to his account, the single major positive development of the Marxian labour theory in the three-quarters of a century since Marx's death, that is Stalin's " Economic Problems of Socialism in the U.S.S.R ". Mr. Meek here gives us an extremely adulatory and completely uncritical account of Stalin's economic pronouncements on the lines of his Stalinist essays of a few years back in *The Review of Economic Studies* (1953) and the *Economic Journal* (1953).

Mr. Meek's sense of timing resulted in his volume going through the press just when the first (but not of course the later and fuller) accounts of the 20th Party Congress were coming in. The lengthy discussion of Stalin's essay culminates in some paragraphs (in the form of a stop-press addendum) which can be read with excruciating interest by the *connoisseur* of contemporary Marxmanship (pp. 282-4). Possibly stimulated by what he describes as the " critical re-assessment " of Stalin's work, Mr. Meek suddenly rounds on his Soviet colleagues and attacks " the exaggerated respect for authority which has so often disfigured Soviet work in such fields as economic theory " (p. 282). One can only hope—in the interests of peaceful coexistence—that Soviet economists will feel able to accept this magisterial rebuke in the sympathetic spirit of fraternal comradeship in which, doubtless, it was penned. It would be deeply regrettable if the force and justice of this denunciation seemed to be in any way impaired by the fact that it emanates from one who for years has been hailing, in meticulously uncritical terms, Stalin's " unique authority ", his " mastery of the method of Marxism ", his place (with Mao Tse Tung) as one of " the two most competent contemporary exponents " of Communist philosophy, his " sober and realistic " work as a " serious scientist ", in " building the theoretical foundations ". Indeed, Mr. Meek's Soviet colleagues will be interested to observe that even in the pages immediately preceding those in which he chastises them for their uncritical subservience, he himself is to be found seizing every opportunity of exhibiting his disapproval of those who, not showing a sufficiently exaggerated respect for Stalin's " unique authority ", were duly framed and killed off (e.g. Bukharin, p. 264, and Voznesensky, p. 273). Mr. Meek concludes with a kind of defiant death-knell for the Marxian labour theory : " Stalin's *Economic Problems* may well remain the basis for serious scientific work on the problems of the operation of the law of value under socialism for some time to come " (p. 284).

T. W. HUTCHISON.

The Meaning and Validity of Economic Theory : *a Historical Approach.* By LEO ROGIN. New York : Harper. London : Hamish Hamilton. 1956. xvii + 697 pp. 52s.

This posthumous publication is an unorthodox and stimulating contribution to the history of economics. The individuality of Professor Rogin's study, as with the works of Wesley Mitchell and Joseph Schumpeter in this field, arises mainly from the author's conception of the nature and functions of economic theory, which is vigorously stated at the outset. This initial statement gives a distinctively personal quality and unity to the remainder of the volume. The reader's verdict as to the success or failure of this venture will probably be governed by his methodological views, for, as J. S. Mill once remarked, differences between scientists on matters of principle usually stem from this source. But whatever the verdict, one cannot fail to be stimulated both by the novelty and boldness of the author's judgments, and by his efforts to encompass the diversity of the past within a single unified framework.

Professor Rogin's methodological position is closer to Mitchell's broad institutionalism than to Schumpeter's strict identification of economic science with theoretical analysis, for he is chiefly concerned " with the objective and hence readily demonstrable correspondence between theory and policy " (p. 13). The " objective meaning " of a theory represents its public significance—the use to which it is put, rather than the theorist's motivation—as evidenced by its orientation to certain " strategic factors " in the contemporary social situation. The validity of the theory, i.e. its relevance to the empirical situation " at the time of its original projection ", must also be tested by reference to this situation. Thus the criterion is pragmatic and positivistic ; the purpose of science is prediction, not merely explanation which is the task of " philosophers " (p. 480). But while historical and institutional factors must obviously be taken into account in assessing the relevance of theory to policy, Professor Rogin recognises that the key question is not one of the legitimacy of abstraction *per se*—that red herring pursued by the historicists and the institutionalists—but of " significant " abstraction (p. 482).

There are many difficulties inherent in this approach, and the author is obviously more at ease when dealing with classical and neo-classical writers, whose policy orientation is fairly readily indentifiable, than with writers like Walras and Menger, whose policy interests are subordinated or disguised. Though he proposes to avoid references to motivation, he often fails to live up to this ideal. Professor Rogin attacks the " sterile " pursuit of " objectivity " in social theory (p. 12) and claims that it usually ends in support for the *status quo*, whether intentionally (as with Jevons' theory of capital, which was designed to resolve the conflict between capital and labour, pp. 467-8) or not (as with Menger). Conversely he applauds Senior's progress from pure theory to policy in recognition of the fact that a neglect of " sound " principles (p. 246) can have serious practical consequences, though he exaggerates Senior's fear of the " economics of the poor " (pp. 251-9). There is a fruitful discussion of Böhm-Bawerk's failure to exclude institutional (i.e. juridico-historical) influences from his theory of capital. But Walras' general equilibrium theory is summarily dismissed : it is not general, since it postulates private property in land and capital goods (can any theory be general in this sense ?) ; its technical and institutional assumptions are too far removed from the realities of modern capitalist society—and this applies to all modern theories of equilibrium under perfect competition ; and, being incapable of verification, it is unscientific.

Even when he is dealing with writers demonstrating an avowed interest in policy matters Professor Rogin's approach raises many difficulties, partly because he narrows his perspective unduly when identifying the " strategic factors " to which their theories are orientated. Though he considers such problems as short-term fluctuations (Malthus), the Corn Laws (Ricardo), and unemployment (Keynes), his discussion often boils down to the issue : does the writer in question accept or reject capitalism and the institution of private property ? At one stage (p. 366) Professor Rogin even remarks that economic theory has usually been a by-product of the theorist's conception of the state. This is an appropriate standpoint from which to examine Marx's theory, or the relationships between J. S. Mill's socialist programme and his economic doctrines ; and there is an illuminating discussion of the correspondence between Marshall's " practical gradualism " and his theoretical conservatism, though the attempt to link this with his use of the differential calculus (p. 566) is obviously far-fetched. But in general the task of identifying the policy orientations of any theory is far more complex than Professor Rogin implies.

Enough has been said to indicate the objectives and some of the distinctive features of this volume. Judging the author by his own pragmatic standards, he has clearly failed to shed much new light on the criteria for selecting economic principles relevant to the present day. As he himself admits, it takes a generous measure of hindsight to identify the " strategic factors " in any situation ; and the attempt to develop theory with direct reference to these factors would result in an intolerable constriction of the theorists' perspective. But by concentrating on the policy implications of economic doctrines Professor Rogin has provided a welcome change from the usual preoccupation with the development of pure theory. In recompense one can almost excuse his narrow and doctrinaire methodological conceptions.

A. W. Coats.

The Sterling Area in the Postwar World. By Philip W. Bell. Oxford University Press. 1956. xxvi + 478 pp. 63s.

In this monumental work, clearly the fruit of immense scholarly labours, the author (an American), gives us (i) very detailed accounts of the internal monetary arrangements of most of the individual members of the sterling area, of the monetary arrangements as between members of the area, and of the monetary arrangements as between the area as a whole and the rest of the world, (ii) the modus operandi of all these arrangements under the impact of changes in international trade and capital movements, particularly in the period 1946-52, and (iii) an appraisal of the way in which the arrangements seem likely to develop in the future.

The value of (i) is mainly in the excellence of its detail, but in addition Professor Bell provides a general critique of the view that the sterling area is " the largest area in the world free from international payment restrictions ", and to this end is able to produce a surprising amount of evidence of intra-area controls.

Under (ii) we get a refurbished version of Professor Paish's classic article on " Banking Policy and the Balance of International Payments " (published in *Economica*, November 1936), with suitable variations to account for the local peculiarities of different parts of the sterling area, each variation being tested by reference to a vast amount of statistical material assembled by the author apropos of the period 1946-52.

Under (iii), Professor Bell's appraisal of the future of the sterling area suffers from a certain inadequacy in his assessment of both the centrifugal and the centripetal forces within the area. How can we (for example) regard as at all exhaustive his discussion of the " Cohesion of the Sterling Area " (pp. 401-418) when he gives no consideration either to the effect of the existence of the sterling area on the terms of trade of the individual members, or to the basis on which the dollar pool would be divided if the sterling area arrangements were terminated ? Nevertheless, though there are issues which Professor Bell omits to treat, the ones he does treat are treated very competently, so no harm results provided we are duly cautious of accepting his final summing-up as the last word on the subject.

BRIAN TEW.

United States Imports and World Trade. By H. G. AUBREY. Oxford University Press. 1957. x + 169 pp. 21s.

This is a good book. Mr. Aubrey sets himself the task of assessing the value of United States imports twenty-five years hence. He rejects the thesis that a " law " of declining marginal propensity to import is operating in respect of United States imports. He arrives at the conclusion that (in terms of 1953 prices) this value will increase by something like $10,000 million. The problem of the future, in this writer's view, lies not in the total dollar supply but in its distribution. The lion's share of the increase of United States imports will go to Latin America and Canada. If this increase is to end the dollar shortage in Europe then this will have to be effected in large part by the creation of European export surpluses to Latin America and Canada. This, as Mr. Aubrey points out, certainly presents real problems.

Another quite widespread notion, that there is a long-period price trend working against primary-producing countries, is challenged by the writer. After examining the past development of primary and manufacturing prices, he comes to the conclusion that no such long-period trend is established by the historical facts. Neither does he see any reason to expect the prices of primary materials to suffer a relative fall in the future.

The book is distinguished not only by its independence of thought but also by the refreshingly sound methods used in it. For the most part, the study is based upon a thorough knowledge of the relevant facts about principal commodities entering into American trade. In making his assessment of future consumption, production and prices, Mr. Aubrey has drawn upon many other economists working in the field; but he has also drawn upon the experience of producers and business men. Thus a large part of the work is entirely free from questionable elasticities and general supply or demand functions. Only as a last resort, when assessing the imports of manufacturers and of the relatively minor primary materials, does the writer make use of a postulated general relationship between national income and consumption. One cannot help feeling more confidence in the validity of Mr. Aubrey's estimates of future imports than one feels in many theoretically more elaborate studies in this field.

H. MAKOWER.

On Freedom and Free Enterprise: essays in Honor of Ludwig von Mises. Edited by MARY SENNHOLZ. D. Van Nostrand Company Inc., Princeton. 1956. xiv + 333 pp. $4.

It is the besetting sin (or saving grace) of most economists to temporise over fundamental principles when they make recommendations of policy for actual societies. No such guilt attaches to the nineteen essayists of this volume. All are admirers of Ludwig von Mises, economist, sociologist and philosopher. Almost all are enthusiastic disciples of von Mises, the crusader.

They include many sociologists and economists of eminence, and it is because they write as disciples that this volume acquires an unusual flavour that is both stimulating and highly provocative. Most critics of von Mises would not, I imagine, impugn the excellence of his economic analysis, however much they object to his extreme libertarian standpoint. Few, in this country, would accept the policy conclusions that are a feature of most of the essays in this volume, but many will be impressed by the soundness of much of the analysis that is deployed *en route* to these conclusions. Unfortunately there is some variation in standard and there are one or two essays that, to this reviewer, seem just plain silly.

Of the many excellent articles it is possible to mention only a few. W. H. Hutt's "The Yield from Money Held" puts the case most cogently for regarding money held as consumption in no way different from any other consumption arising from consumption capital, such as houses. L. M. Lachmann's "The Market Economy and the Distribution of Wealth" is an illuminating disquisition on the errors that result from neglecting certain characteristics of capital. M. N. Rothbard's "Toward a Reconstruction of Utility and Welfare Economics", the longest and most ambitious essay in the book, attempts to demolish current ordinal and cardinal utility theories, as well as that of "revealed preference" in order to give a firm foundation to yet another theory of choice, the theory of "demonstrated preference". F. A. Hayek's "Progressive Taxation Reconsidered" is a pretty piece of analysis and no lost cause could receive more masterly advocacy. These are but a few of many provocative essays on a great variety of topics, economic, sociological, political and philosophical. It is a rare tribute to one man that so many distingushed names appear in this volume, but it would have been no less a tribute had the volume counted amongst its contributors some of Von Mises' many admirers who strongly oppose his political conclusions.

W. E. Armstrong.

History of the Second World War. United Kingdom Civil Series. *Food:* Vol. II. *Studies in Administration and Control.* By R. J. Hammond. H.M. Stationery Office and Longmans. 1956. xiii + 835 pp. 50s.

This volume is a continuation of Mr. Hammond's history of the Ministry of Food, of which the first instalment appeared in 1951. By contrast with the first volume, which dealt with wartime food policy, the main emphasis here is on administration, and the subjects covered are the control of the chief foods which were mainly home produced (fresh fish, eggs, potatoes and milk), emergency and communal feeding and the administration of food rationing. A third volume, on the control of imported foods, is still to come.

The scale of this volume is immense and far exceeds the space here available for its review. Mr. Hammond gives a very full account of the circumstances attendant on the development of the schemes he examines, but he writes as a critical historian and not merely a narrator. Few if any of them emerge unscathed from his searching analysis: his verdict on the wartime egg scheme—that it is difficult to see how it could have been improved upon—is as near as he comes to an award of full marks. Even though they usually succeeded in substantially achieving their objects, most of the other schemes here considered are shown to have suffered from some besetting weakness or misconception of purpose which, however understandable in the circumstances, it is the historian's duty to expose.

For example, the milk scheme, in many respects the most important and ambitious of the commodity controls discussed in this volume, had considerable achievements to its credit, but its pricing and rationalisation arrangements come in for criticism, and Mr. Hammond's comments on the attitude of the Perry Committee and others towards the question of distribution costs come near to being contemptuous. He shows convincingly how the Ministry was hampered throughout by the failure, owing to inadequate prewar preparation, to carry out the original plan of completely suspending the statutory marketing schemes, a step which would greatly have strengthened its position in dealing both with producers and distributors.

Rationing, from the consumers' point of view the central problem of wartime food administration, occupies nearly half the volume. Here it is now easy to recognise the handicap the Ministry imposed upon itself, in Mr. Hammond's words, by " the rejection of a ration currency in favour of a method of accountancy based on the consumer-retailer tie " and by the failure to appreciate that a points pricing system which substantially equates demand and supply may provide as effective a guarantee of fair distribution as can be secured by consumer registration. Mr. Hammond's discussion of points rationing is to be found in his first volume, but he here prints in an appendix a remarkable but apparently forgotten memorandum in which Sir Sylvanus Vivian proposed a points rationing scheme in November 1917.

The formidable amount of detail included in this volume may lose Mr. Hammond some readers: sixty pages for instance are given to the control of fresh fish, fifty to the rationing of a single commodity, tea, and eighty to the problems of distributing ration books to the public. But his conclusions invariably deserve attention, for his authority on these matters is unique; and they have by no means lost their practical importance with the ending of hostilities and the disbanding of the Ministry of Food.

E. F. NASH.

The Analysis of Family Budgets. By S. J. PRAIS and H. S. HOUTHAKKER. University of Cambridge Department of Applied Economics. Monograph 4. Cambridge University Press. 1955. xx + 372 pp. 50s.

This is another volume from the Department of Applied Economics of Cambridge recording and analysing human behaviour. The source materials are the working class and middle class expenditure surveys of 1937-9, material which is now rather out of date but was used because, when the investigation started, there was nothing else so good, and anything more up to date would have recorded patterns of expenditure controlled as much by rationing as by price.

Rather more than half the book records analyses made by punched card methods on the original data, using all the middle class and about one-fifth of the working class budgets. Apparently it was beyond the resources available to analyse all the working class budgets for, though the selection was primarily on the basis of households providing additional information about clothing, this additional information was in fact not used. As this is by far the most detailed analysis made from the 11,000 budgets collected, one wonders whether the size of the original sample was not a wasteful use of resources because smaller samples do for overall averages. These analyses give for individual commodities the expenditure per household and number of households involved when households are divided according to the number of persons therein and total expenditure. Where collected, information is also given about quantities involved and there are also summary tables including regional analyses, per person, for groups of commodities. Much of this information might reasonably have been expected in a basic report on the original inquiries and it is to be hoped that the Ministry of Labour will publish some such detailed analyses of their 1953 budget inquiry without much further delay.

The remainder of the research records results of regression analyses, worked out with the help of an electronic computor, to give algebraic expression to the patterns of expenditure revealed. Experimenting with various formulæ on food classified into broad groups, and with v_i as expenditure on a specific group and v_o as total expenditure on all goods and services, it was found that formula

$$v_i = a + b \log v_o$$

gave a better approximation than the

$$v_i = a + bv_o$$

suggested in the pioneer work by Allen and Bowley (*Family Expenditure*), and that better results were obtained by expressing values per person rather than per household. This formula, too, with its lower elasticity for higher expenditure seems to make a continuous series of working class and middle class budgets for elasticities. For non-food items this formula was not generally satisfactory and, though not good throughout, regressions were calculated on the basis of constant elasticities

$$\log v_i = a + b \log v_o$$

From these regressions expenditure elasticities are recorded at an assumed outlay of £100 per person per year, which is about the 1938 average.

Such expenditure elasticities are made up partly of a quantity and partly of a price (i.e. quality) factor, and for those foods where quantity was recorded the price factor was isolated and recorded for average outlay. It was common for one-third or more of the increased expenditure with increased total outlay to be associated with a price and not a quantity rise, the feature being especially noticeable for jam, sausages, frozen meat and cake mixture, whilst for margarine and tinned milk the expenditure elasticities were negative but the quality elasticities were positive. The extent of this feature naturally depends upon the classification chosen. For instance, a wider classification of meat, including both home-killed and imported, being less homogeneous, would have given greater opportunity for price differentials.

To assume that all persons, of whatever age or sex, are of equal significance from an expenditure point of view is only a first approximation, and a chapter records attempts to measure the significance of different classes of person, admittedly a very difficult task. The interesting feature is the high value given by the presence of a young child to the additional consumption of food when allowance has been made to compensate the family for the additional cost of the child's keep. A child under one is associated with expenditure one-third of an adult male and a child from one to four with expenditure one-half of an adult male.

A pleasing feature of the book is the way abstruse theoretical problems are interspersed with very homely discussions of the equally important practical problems. Punched card equipment is the classic method of storing bulk data. Sorting and adding is done efficiently but multiplication is a slow process to be avoided if possible. A momentary failure of a relay does not affect the general working, but it does occasionally lead to the printing of a wrong total. In forming sums of cross products on a rolling total tabulator errors may occur in more than one-tenth of the totals printed out, so checking is necessary. With the electronic computor a minor fault in one part of the machine usually affects its total workability so errors are less likely. But the research worker must expect to invest a good deal of time, sometimes many weeks, in programming a new problem for an electronic computor.

H. S. BOOKER.

Scheduling of Petroleum Refinery Operations. By ALAN S. MANNE. Harvard University Press. Oxford University Press. 1956. xii + 185 pp. 40s.

The modern oil refinery is made up of a number of interrelated processes each with a range of permissible operating conditions. The establishment of an optimum-profit operational plan under such circumstances has long presented a problem for the oil economist.

Dr. Manne shows how this problem has been tackled by the use of mathematical methods (particularly linear programming), and demonstrates, in four case studies, the advantage of this approach over the rule of thumb methods too often employed in the oil industry.

Conventional refinery cost accounting methods are first reviewed and the author is suitably critical about the value of product cost calculations as a guide to profit optimisation.

Linear programming is then introduced painlessly in a problem of allocating crude oils to refineries. By a generous use of simplifying assumptions Dr. Manne manages to frame the problem in the transportation form, using net realisations per ton of each crude at each refinery as the elements of his matrix.

In the second case study the optimal size and best operating conditions for a naphtha reformer are obtained. Dr. Manne introduces curve fitting and partial differentiation into a field where the nomogram has hitherto held sway.

The gasoline blending problem solved by Charnes, Cooper and Mellon (*Econometrica* Vol. 20) is then dealt with. Manne takes the analysis a stage further by facing a complication which the original paper ignored—the non-linearity of the relationship between octane number and tetra-ethyl lead concentration. An iterative method of solution is developed from concave programming methods suggested by Kuhn and Tucker. Unfortunately, the method is not mathematically rigorous; intelligent linearisation of the system and the use of the normal simplex method would probably give results of sufficient accuracy.

The final case study is of an integrated refinery system involving cracking, recycling and blending, with linear programming as the optimising technique. Full details are given of the way the equations of the system are set up, and the use of parametric methods for handling changes in the model is demonstrated.

While there are a number of subjects which one would have liked to have seen included (dynamic programming for instance), it would be ungracious to criticise Dr. Manne's choice of techniques to be demonstrated. He has managed to cover all the important ground in a comparatively short book and has done so with a lucid and attractive method of presentation. Although the book is concerned only with petroleum applications, any industrial economist with a minimum of mathematical dexterity will profit from reading it.

D. A. CAPLIN.

The Moral Basis of Burke's Political Thought. By CHARLES PARKIN. Cambridge University Press. 1956. viii + 145 pp. 12s. 6d.

The study of Burke's thought involves peculiar difficulties. It is not simply that he is a moralist, rhetorician, economist, philosopher, etc., but that he is always several of these simultaneously. The common manner of solving this difficulty is to treat the rhetoric as mere decoration, behind which Burke is seen as " fundamentally " a utilitarian (though " for utility Burke reads history "), providing us with a " manual of practical statesmanship ". This procedure, as Mr. Parkin suggests in his compact and penetrating essay, " lops off all that is most characteristic and profound in Burke's ideas in order to fit them to a superficial general concept ". Mr. Parkin's solution is to take Burke's moral position as fundamental, and in so doing he incidentally provides a valuable anthology of important passages. This moral interpretation may be even more plausible than Mr. Parkin claims, for though he concludes that Burke's morality " rests on a religious perception ", it might equally be argued that Burke's religion rests on a moral perception. Material for such a view can be found in Mr. Parkin's book—e.g., in the statement that " it may be doubted whether Omnipotence itself is competent to alter the essential constitution of right and wrong " (p. 41), a paradox suggesting that Burke's thought rests more on a Divine *order* than on a Divinity.

Mr. Parkin provides us with an excellent exposition (criticism is not his concern here) of a moral and political theory which makes no compromise with the welfarist notions no modern thinker can avoid; a view which insists (" Thoughts on Scarcity ") that " it is not in breaking the laws of commerce, which are the laws of nature, and consequently the laws of God, that we are to place our hope of softening the Divine displeasure to remove any calamity under which we suffer . . .".

K. R. MINOGUE.

Nationalisation in France and Italy. By MARIO EINAUDI, MAURICE BYÉ AND ERNESTO ROSSI. Cornell University Press. London: Cumberlege. 1956. x + 260 pp. 28s.

This volume contains three separate studies—one by Mario Einaudi comparing nationalisation policies in different countries, and two of nationalisation in France and Italy by Maurice Byé and Ernesto Rossi respectively. In addition there is a useful bibliographical note.

Einaudi presents a rapid survey of the main political and administrative issues raised by nationalisation. He concludes that " nationalisation in the ultimate analysis is an instrument of despair and an admission of defeat, unless justified by exceptional circumstances ", and that " the main efforts of governments should be applied to the task of achieving the maximum measure of expert and autonomous administration" (p. 58). He further favours international control of publicly owned industries. In general British practices come out of his comparisons very well—sometimes perhaps too well.

When we turn to Byé's essay we realise why. Despite his fairness and moderation, his painstaking description of the developments which led to post-war events, and his careful avoidance of irony, the ludicrous character of many arrangements governing French nationalised industries is apparent. Some of them seem calculated to inhibit effective management—for instance the representation of interests on the boards and the imposition of 10 to 15 separate controls on some industries, two of which endow representatives of separate ministers with powers of suspensory veto over the decisions of the Boards. An interesting feature of Byé's essay is his account of the research undertaken by French nationalised industries into the possibilities of some form of pricing which would take marginal cost into account. This essay is clear and well arranged, and very moderate and scholarly. Like Einaudi, its author favours the organisation of nationalised industries as autonomous public corporations.

By contrast, Rossi's brief survey pulls no punches. In particular, he criticizes the tendency of Italian industry to unload its unprofitable enterprises onto the government and the various alleged deficiencies of the bureaucracy. His racy style and engaging irony make pleasant if controversial reading.

LUCIEN FOLDES.

Die Zukunft unserer Wirtschaftsordnung. By ERICH PREISER. Vandenhoeck & Ruprecht, Göttingen. 1955. 93 pp. Dm. 2.40.

To the outside observer post-war German discussion about economic policy has often appeared to be rather one-sided. The "New Liberals" with their insistence on a minimum of state intervention have dominated the field, and there have been relatively few economists of more moderate outlook.

One of these few is Professor Preiser, the author of this booklet on "The Future of our Economic Order". He opens with a critical account of laissez-faire capitalism. Although the impressive achievements of this system are not forgotten, the author concentrates on the reasons for its decline—the social problem, due mainly to the unequal strength of capital and labour, the growth of monopolies, and the periodic crises of the whole economic structure. The author's main concern, however, is with the future. Which economic order will give freedom to the individual both as a consumer and as a unit of labour, and yet ensure that the fortunes of the lower classes are substantially improved, that monopolies are held within bounds, and that there is rapid as well as stable growth ? The fully socialised economy is rejected mainly because it does not meet the criterion of individual freedom in the labour market. Thus we return to a market economy, but one which in many ways differs from the traditional laissez-faire system. Within this new order, the bargaining power of labour is strengthened, strict monopoly control is imposed, and the government pursues an active full-employment policy. The state therefore plays an important part in the author's ideal economic system, helping it to function more efficiently and ensuring social justice.

Such a brief treatment of far-reaching issues is bound to leave many questions unsolved. However, to this is added a rather more culpable lack of realism in some of the arguments. But apart from these shortcomings, this is a balanced and well argued plea for the kind of modified laissez-faire system which would nowadays command widespread support, and therefore one hopes that this pamphlet will find a wide audience inside Germany.

H. H. LIESNER.

Commerce et prix du blé à Marseilles au XVIII^e siècle. By R. ROMANO. Librairie Armand Colin, Paris. 1956. 185 pp.

The eighteenth century was a period of increased trade activity for the port of Marseilles. Previously, in common with most of the Mediterranean, it had undergone economic difficulties since the 1620's, due largely to its inability to evolve new monetary methods to meet the demands of the great economic changes of the sixteenth and early seventeenth centuries. As a result, Marseilles had no banks and no real bankers until an edict of the crown rectified the position in 1709. Thereafter, once the temporary setbacks caused by the economic crisis of 1715 and the plague of 1720 had been overcome, progress was continuous. By 1741 the trade of Marseilles had reached substantial proportions, and continued to develop without any significant breaks in spite of the wars in which France was involved from 1756.

M. Romano's monograph is the third volume to appear in the sub-section *Monnaie-Prix-Conjoncture* of the important series published under the auspices of the Ecole Pratique des Hautes Etudes, to which he has already contributed a study of the trade between the kingdom of Naples and France and the lands of the Adriatic during the eighteenth century. It is an intensive analysis of trade returns for the port from both the national and local archives, is profusely illustrated with graphs and tables, with a detailed statistical appendix taking up just over one-third of the entire book. The figures show clearly the increasing importance of wheat in the total volume of imports of Marseilles from 1725, and it is likely that its proportion would be higher still were it to include imports from other French ports in addition to those from other countries. The latter came from six zones: (1) Italy, Sicily, Malta, the Dalmatian coast, and parts of Albania—a zone which was not a source of continuous supply on account of its own periodical deficiencies, but *ceteris paribus*, a reliable one, as for example during the famine of 1770–1, from 1776–8, and the vital years of 1788–90; (2) the ports of the Levant, which seem to have been exporting less during the second half of the century; (3) the coasts of Algeria and Tunisia, and part of the coast of Morocco and Tripolitania—an area of uneven supply, but with some continuous periods such as 1768–1777, and from 1781; (4) the Iberian peninsula and the Balearic islands—intermittent and decreasing supplies from these; (5) Corsica and Sardinia—again like (1) a reliable but not a continuous source of supply; (6) Northern Europe, which provided wheat when Mediterranean supplies were insufficient, although some of what was being regularly imported from France's Atlantic ports really came from this source.

As for the export trade of Marseilles, the figures show Italy and Spain to have been the two regular customers: they imported inferior quality wheat in exchange for the good quality cereal which they sold to France. Portugal, Holland, Northern Europe, and the Levant seem to have bought only when they were short. England was, however, importing increasing quantities from Marseilles during the second half of the century. The wheat trade of Marseilles, therefore, consisted of supplying the port and the hinterland (and, during years of shortage, a large part of Southern France) with good quality grain, and providing its suppliers with wheat of poorer quality and at a lower price. The documents allow of calculation of the proportions involved only for the period 1756–1779, but this shows that 16·48 per cent. of the grain handled at the port was exported, the rest being needed for the port itself and for distribution within France.

M. Romano's price statistics are in general agreement with those given by Labrousse for the *généralités* of Provence and Languedoc for the period 1756–90. As his sources provide figures for these years only, he is unable to look for long-term or cyclical changes. His monograph makes a welcome contribution to the history of France's greatest Mediterranean port which is now being written, the fourth volume of which, by Bergasse and Rambert, covering the years 1599–1789, was recently published and the succeeding volumes of which will analyse more deeply relations with the Levant, North Africa, the countries of Europe and France's colonies within this period. It also contributes to the study of the whole question of food supply in eighteenth century France which is receiving increasing attention. M. Romano asserts that the development of the wheat trade of Marseilles was continuous until the reign of Napoleon when activity moved to the ports of Italy. His analysis, however, goes only to 1790, and it would be profitable to have a similar analysis of the fortunes of the trade during the French Revolution which had its special circumstances and controls.

ALUN DAVIES.

Blue Funnel: *a history of Alfred Holt and Company of Liverpool from 1865 to 1914*. By FRANCIS E. HYDE. Liverpool University Press. 1956. xviii + 201 pp. 30s.

Professor Hyde has written a book that is much more than a history of one of Liverpool's leading firms. In the last third of the nineteenth century Alfred Holt & Co. built up a strong position among the shipping firms providing services between Britain and the Far East, and subsequently the Holts extended their activities to Australia as well. They were thus closely concerned with some of the outstanding achievements in securing new markets and sources of supply, which enabled Britain to retain its trading supremacy in an increasingly competitive world. In consequence, their history provides excellent illustrations of the varied ways in which shipowners and their immediate associates contributed to this necessary switch in British trade.

Among the important elements in this contribution Alfred Holt's talent as a marine engineer is well known. No less significant were his enterprise in employing in a new and seemingly risky field the ships in which his ingenuity was embodied and his quickness in making use of the merely potential (and, by contemporaries, often underestimated) advantages of the Suez Canal. No one did more than he to take trade between Europe and the Far East into a new era as far as regularity and efficiency of service was concerned, though new rivals followed where he had proved the possibilities of profit, and in some ways surpassed him. But this book also makes plain the critical importance of other factors often neglected in general accounts of the history of trade: in particular, the enterprise of shipping agents established in distant ports and the readiness of European shipowners to stimulate their own traffic by establishing subsidiaries to operate feeder services to and from some of their principal ports of call. The history of Holts also throws a good deal of light on the working of the Conference system and its effect on freight rates, though the economic considerations involved might have been clearer if it had been possible to show how far, while free competition existed, the carrying capacity of the firms' vessels was under-utilised. But this is not a major criticism, since the book does include some very useful analyses of changes in costs.

At a time when so many firms seek to commemorate themselves by some kind of historical record and end by publishing a disjointed collection of trivialities, unrelated to economic reality, it is good to have this reminder of the excellent job which the professional can do in business history, when he is given the opportunity.

W. ASHWORTH.

Studies in the History of Accounting. Edited by A. C. LITTLETON and B. S. YAMEY. Sweet and Maxwell. 1956. viii + 392 pp. 50s.

This volume is an appealing collection of twenty-four studies of important aspects of the development of financial recordkeeping from classical antiquity to the end of the Victorian era. It is the third in a series of volumes of studies on accounting subjects, the first two being *Studies in Accounting*, edited by W. T. Baxter, and *Studies in Costing*, edited by David Solomons. Although it maintains the same high level of scholarship as the earlier volumes, it differs from them in several other regards. (1) The Association of University Teachers of Accounting has been joined as sponsor by its American counterpart, the American Accounting Association, and the British editor, B. S. Yamey, has shared his duties with A. C. Littleton, the distinguished American writer on accounting history. (2) Most of this volume (fifteen of the studies) is made up of previously unpublished material, while the earlier volumes contained reprints almost exclusively. (3) Perhaps most important, this volume will be appealing and useful to a broad audience of economic historians, social historians and students of business finance, as well as to accounting specialists. The essays are well selected to appeal to the broader group as well as to the specialist.

The introduction by B. S. Yamey is a sparkling study of the origins and spread of double-entry recordkeeping and its relationship to the conventions guiding income determination. His modest appraisal of the historical significance of double entry is well documented and convincing. He probably goes too far, however, when he says that " the system of double entry has little, if any, influence on profit calculations ". All those who have attempted to suggest methods for adjusting reported profits to recognize inflationary conditions realize what a barrier to change traditional training in the double-entry system can be.

One of the most interesting essays traces the rôle of notched sticks (wooden tallies) in the recordkeeping process of six centuries. Significant though their use was, their demise can only be described as spectacular. Rudolph Robert relates that a statute of William IV ordered the destruction of the tallies that had accumulated through the centuries, since they were taking vast amounts of storage space. It was decided to use them as fuel in the heating stoves of the House of Commons. So numerous were the tallies and so great the zeal of the stokers " that the historic Parliament buildings were set on fire and razed to the ground. The tallies perished in a blaze of defiant glory . . ." Perhaps this dire event helps to explain the almost universal current reluctance to destroy accounting records.

The essays by W. T. Baxter on accounting in colonial America and by Louis Goldberg on early Australian records reveal the substantial similarities in the business and accounting problems and procedures of those frontier communities. The essays on the origin of the trial balance by Edward Peragello and on the evolution of journal entries by A. C. Littleton are more concerned with accounting technique than any of the others, but they too serve to build up the picture of the evolving structure of business organization.

The studies of first English books on bookkeeping and of the works of Hugh Oldcastle and John Mellis are largely overlapping. This is one of the few places where the selection of essays went astray. Perhaps, though, the editors, by the repetition of instances of unacknowledged borrowing from earlier authors, wanted to give emphasis to a statement by Peragello. He noted that Manzoni's text of 1540 was " nothing more than a copy of Pacioli's with minor changes". He adds, however: " This should not be surprising considering that plagiarism was a common practice until recent times." Perhaps if Peragello had been familiar with the recent flood of textbooks in elementary accounting he might have omitted the final limiting phrase from his comments.

Space permits only brief notation of the original and thoughtful comments of de Ste. Croix on the relation between the introduction of Arabic numerals and the rise of modern accounting, the works on pre-Pacioli records by the de Roovers, the tracing of the effects of legal enactments on accounting records by Edey and Panitpakdi and by Pollins, and the story of the remarkable career of Simon Stevin by ten Have.

No review can be all praise and I must record two regrets about this volume. It was disturbing to note the difficulties that some of the non-accountants experienced with accounting concepts. Certainly a phrase like " a balance sheet for a given twelve months " has no place in a book on accounting. The order of presentation of the essays is less than ideal. The editors have chosen a chronological order, starting with the Greeks and concluding with the onset of this century. A topical ordering, using such major categories as pre-Pacolian accounting, early English books on bookkeeping, accounting, on the frontier, might have given the volume greater orderliness.

These are small complaints, however, and my general reaction is one of pleasure. I began this volume with some reluctance, for essays on accounting history are frequently dull and uninspired. As I read on I felt that this volume had come closer than most to living up to its extravagant publisher's blurb that " this book makes fascinating reading ".

SIDNEY DAVIDSON.

Scientific Management and the Unions. By M. J. NADWORNY. Harvard University Press, Cambridge, Mass. Oxford University Press. 1955. vii + 187 pp. 30s.

Scientific management has been the subject of intense controversy for more than half a century. It is associated by workpeople with the speeding up of the pace of work and the tying of job performance to standards calculated by a stop watch without regard for human needs and abilities. This objection from workpeople, manifested by their unions, has been based on a powerful emotive feeling that a man was debased to the level of a soulless machine when he was studied, timed and rated on the job that he was employed to do. Though scientific management has lost much of its terrors with the development of collective bargaining and workshop organisation, distrust has not entirely disappeared.

In this short book Professor Nadworny ably traces the evolution of the system, developed first by F. W. Taylor, to which the phrase scientific management applies. Taylor saw the unions as an anachronism and failed to understand why they were hostile to his methods. But later generations of production engineers tried, and to a large extent succeeded, in obtaining union-management co-operation. The opposition aroused by Taylor resulted in the United States Congress passing in 1916 amendments to Bills to prevent the use of the stop watch and the bonus system in government establishments. These restrictions, it is astonishing to learn, were renewed year after year until as recently as 1949 when they were dropped as a result of the efforts of Senators Taft and Flanders.

The only country in which Taylor's " system " has met with no opposition, it is ironical to reflect, is the U.S.S.R. There Taylor's scientific methods have been highly praised, and applied, with the results anticipated by the free trade unions of the capitalist world.

B. C. ROBERTS.

Non-Parametric Statistics for the Behavioral Sciences. By S. SIEGEL. McGraw-Hill Publishing Company, New York. 1956. xvii + 312 pp. $6.50.

Until about twenty years ago, the procedures of mathematical statistics presumed that the frequency distributions, from which the observations being examined had emanated, were of known mathematical form. The problems were those of estimating, or testing, hypotheses concerning certain unknown constants ('parameters ') of these distributions. During the nineteen-thirties, it became clear that there were classes of problems which required for their solution no knowledge of the mathematical form of the underlying distribution (except perhaps of its continuity), and since then there has been a steady development of this field. Since the new procedures were not concerned with the values of parameters, they were called " non-parametric " methods, a term less satisfactory than the alternative " distribution-free " methods, which better expresses the fact that inferences by these methods are free of distributional assumptions. Recent research has been largely concerned with the efficiency of these methods compared with the older " parametric " methods in those cases where both methods are applicable, and this efficiency is often surprisingly high.

The very recent development of the subject has meant that its theory and applications have remained scattered in journal papers, apart from an occasional chapter in recent textbooks, which are naturally very selective. Professor Siegel's is the first book devoted to the application of distribution-free methods—almost no theory is given. He assumes only a knowledge of the simpler standard statistical procedures, and begins with a short summary of the modern theory of testing statistical hypotheses, which he expects to be too concentrated for readers new to the subject: some study of the theory of estimation and testing hypotheses is a desirable prerequisite for proper use of his book.

The core of the book consists of six chapters, each dealing with test procedures appropriate in a given kind of research situation. The techniques discussed are illustrated with worked examples, and a complete set of the necessary tables is given at the end of the book. This method of presentation is convenient for easy reference, but it loses elegance in that several of the procedures discussed in different chapters are fundamentally the same technique applied to different situations.

Apart from this harmless duplication, the lack of a theoretical framework to the book can be seen in the omission of certain important and powerful procedures. For example, while the appropriate "randomisation" tests are given in chapters 5 and 6, they are not discussed in chapters 7, 8 and 9. Those in chapters 7 and 8 (the randomised analysis-of-variance tests), particularly, are cornerstones of modern statistical practice.

Perhaps as great a defect is that a whole class of distribution-free tests, the tests of randomness of a time-series, has not been discussed at all. The presence of trend and serial correlation in successive observations is clearly of interest to social scientists, and I can think of no good reason why this topic should have been omitted from the book.

This is, then, a rather incomplete catalogue of recommendable distribution-free procedures. The tone of the book, too, is rather tentative in places, and as a whole it lacks the assurance one expects to find in a specialised work. In the continuing rapid development of the subject, the book will have some value as a research worker's manual, but, when the dust of current research has settled, we may hope for a more authoritative work from a specialist in this field.

ALAN STUART.

Planning for an Expanding Economy. By C. N. VAKIL and P. R. BRAHMANAND. Vora & Co., Publishers, Private Ltd., Bombay. 1956. xxx + 404 pp. 20s. or $4.

This book deals with the problem of planning in underdeveloped countries. The first half is a rather strong criticism of India's Second Five Year Plan. Under the Second Plan national income is to rise by 25 per cent. Assuming, on the experience of the First Plan, the capital coefficient to be 2·2 : 1 the Planning Commission has fixed the investment target at Rs 6,100 crores. The authors argue that the capital coefficient will be 5·1 : 1 as there were windfall circumstances during the First Plan and there is greater emphasis on heavy industries in the Second Plan. They neglect, however, that the long-term projects initiated during the First Plan will begin to bear fruit and there will be greater development of labour-intensive industries.

The Plan visualises a shortfall of resources to the extent of Rs. 1,600 crores, which is presumably to be met by deficit financing. The authors are alarmed at the prospect of a rise in prices, which may upset all the calculations of the Plan. But there is every reason to believe that the Government will not allow the situation to get out of control.

The authors consider the emphasis on the development of cottage and small-scale industries in the Second Plan as a retrograde step. They criticize the theory that underdeveloped countries should concentrate on labour-intensive as opposed to capital-intensive methods of production. However, a developing economy must use its limited capital resources in the most advantageous manner. In small-scale industries employment can be provided with the aid of little capital, even though productivity may be less than in capital-intensive industries. An underdeveloped country has no choice in the matter, just because there is not enough capital. The criterion should, therefore, be the effect on employment and national income. Nor is small-scale industry necessarily inefficient. The experience of Japan is relevant.

In the second half of the book the authors put forward a " new approach " and advocate an increased rate of capital formation through the employment of the disguised unemployed in investment activities and through maximisation of the speed of technical changes. They suggest that this withdrawal of the disguised unemployed from agriculture will increase the supply of wage goods, thereby removing an important bottleneck to their employment in investment activities. It is difficult to see how such a movement increases the overall availability of wage goods, though it may increase the marketable surplus. It is true that the most important source for economic expansion in underdeveloped countries is the utilisation of idle labour resources in investment projects. The important question is how to achieve it most expeditiously. The scheme of Community Development Projects in India is a valuable experiment in this direction. It is surprising that the authors make no mention of it.

The authors seem to ignore the need of a planned population policy. They maintain that, " The central problem of economic growth in the context of India and other underdeveloped countries is that relating to the creation of those conditions under which the rate of investment can be stepped up above that of population growth " (p. 240). However, the process of growth will be accelerated if we increase the one and try to reduce the other. Even if population growth is checked now, the labour force will continue to increase for almost a generation. The efforts of the underdeveloped countries to raise their standards of living will depend ultimately upon the success with which they follow an effective planned population policy.

R. N. BHARGAVA.

Trade Unions. By ERIC L. WIGHAM. (Home University Library, No. 229.) Oxford University Press. 1956. 277 pp. 7s. 6d.

There are a great many different aspects to the study of British trade unionism—its complex historical background, the variety in types and sizes of trade union, the many differences in their administration, their important influence on wages and conditions, their political attitudes and influence, their reactions to full employment, and so on. It is well-nigh impossible to encompass all aspects in a single book, yet it is difficult to understand the trade union movement in its complex entirety without giving some attention to each of them. The tendency of writers of introductory books on trade unions, when faced with this task, has been to emphasise the descriptive and institutional or the historical aspects of trade unionism. The weakness here is that insufficient attention may then be paid to policies. Mr. Wigham, who is Labour Correspondent of *The Times*, has chosen a different approach and has made an excellent job of it. His study is historical and descriptive in places but he is clearly concerned to get as quickly as possible into the midst of current problems and policies. His first main chapter is historical. It is followed by chapters dealing with trade unions and, successively, their members, industry, the state, and the world. In each of these descriptive and historical material is mixed in with discussion of issues as they arise. " Trade unions and the world " deals, at greater length than seems justifiable in a book of this type, with the " Internationals " and their successors. The final chapter bears the bold title, " Trade unions and the future ".

Mr. Wigham's approach has its weaknesses, especially for a beginner who is looking for a simple connected account of the present structure of trade unionism in Britain. There is a tendency to repetitiveness, as when information is repeated for different problems requiring similar background. The chapters, other than the historical one, are not divided in sections. This causes a somewhat confusing sliding from one problem to another. The strength of the approach and its appeal to the general reader is its lively and informed discussion of unsolved problems and recent controversies. There is, for example, an interesting account of the period of the wage freeze. The book is remarkably up to date and must have been carefully amended up to the last possible moment. Mr. Wigham's attitudes to the controversies he deals with cannot be evaluated in detail here, and one further remark must suffice. He discusses such issues as the organisation of unions by industries, an overriding body of experts to settle wage claims, and worker participation in the management of industry—on each of these he seems to the reviewer to have put the advantages more fairly and fully that the disadvantages.

D. J. ROBERTSON.

Nasjonalregnskap : teoretiske prinsipper. By ODD AUKRUST. Statistiske Centralbyrå, Oslo. 1955. 123 pp. Kr. 3.

This book by the Director of Research of the Norwegian Central Bureau of Statistics is a difficult one to classify. It is neither a general treatise on social accounting, nor is it simply a companion volume to the Norwegian National Accounts comparable to the recent British publication *Sources and Methods*. It is rather a commentary upon the general problems that have arisen in compiling the social accounts for Norway, outlining the principles that were applied in finding solutions for them. Although related specifically to Norwegian experience, the problems treated are sufficiently common, and the solutions adopted of sufficiently general relevance, for this work to be of interest to anyone working in the field of social accounting. It is, perhaps, best described as a case study in national accounting.

The main part of this slim volume is devoted to a brief but surprisingly comprehensive survey of the problems of classification, valuation, observation and presentation in national accounting. Beforehand, however, we are given a general introduction to the rôle and objectives of national accounting, and a very interesting analysis of the genealogy of the Norwegian system, which traces its ancestry back to Frisch's eco-circ system, Leontief's input-output models, and the work of Stone and the O.E.E.C. National Accounts Research Unit, with which Aukrust himself was formerly a collaborator.

The most original part of the book, however, is the appendix, in which national accounting is treated as an exercise in formal logic, the whole elaborate structure of social accounts being reduced to a logical basis of twenty axioms, which define all the essential concepts and their interrelationships. It is a painstaking exercise, and the most difficult part of the book; but it does throw a new light upon the logical processes involved in the construction of accounts, of this or any other sort.

Finally there is a sixteen-page English summary, which covers the ground extremely well, and gives the reader with no Norwegian virtually complete access to the main argument, though it is, perforce, less satisfactory when confronted with the task of reducing the twenty-three pages of close symbolic reasoning in the appendix to four pages of English text.

ALAN WILLIAMS.

Minimum Price Fixing in the Bituminous Coal Industry. By WALDO E. FISHER and CHARLES M. JAMES. Princeton University Press. London: Cumberlege. 1956. xxxi + 523 pp. £4.

Between 1928 and 1937 several legislative attempts were made to raise prices, wages and profits in the U.S. bituminous coal industry. The schemes either failed to pass through Congress or were enacted and later declared unconstitutional. The Bituminous Coal Act of 1937 finally established machinery for fixing minimum prices at a level designed to cover the industry's average costs. As it happened, minimum price schedules were not made effective until 1940, when prosperity was returning to the industry. The Act expired in 1943.

After surveying the legislation and the action taken under it, the authors describe in detail the procedures which were followed in fixing minimum prices for all grades of coal throughout the U.S. This detailed account of administrative procedures is probably the book's most valuable feature. While their own account is clear, the authors convey an impression of the bewildering complexity of the problems involved and of the largely arbitrary nature of the methods adopted. They then go on to assess the Act at length. They doubt whether it would have been enforced effectively during a severe depression, but if enforceable it would probably have defeated its own objects in the long run. The fixing of minimum prices would have tended to contract long-run demand and to extend supply. It would also have tended to raise average costs and therefore minimum prices: Unions might have been more successful in obtaining higher wages (which was one of the objects of the Act); selling costs would have increased; and the maintenance of prices would have encouraged the mining of high-cost seams and raised average costs in low-cost-mines by diverting demand from them.

This is a well written and scholarly work, which contains interesting and valuable information about price fixing and about the coal industry.

LUCIEN FOLDES.

SHORTER NOTICES

International Banking and Foreign Trade. Published for the GRADUATE SCHOOL OF BANKING (AMERICAN BANKERS ASSOCIATION) and the INSTITUTE OF BANKERS, by Europa Publications Ltd. 1956. 30s. net.

This collection of lectures delivered at the Bankers' International Summer School held at Rutgers in July 1956 is devoted mainly to U.S.A. subjects though there is a paper on Canada and one on Latin American problems. It contains, in small space, much useful information about U.S.A. financial institutions having particular relation to foreign investment. The most notable paper is that by Professor Beckhart, occupying one-third of the book. In 37 pages he gives an excellent thumbnail sketch of Federal Reserve problems, against a historical background, and this is followed by a month-by-month survey of policy in relation to economic activity since 1952.

A Short Economic History of the United States. By ARTHUR BIRNIE. University Tutorial Press. 1956. 146 pp. 7s. 6d.

Mr. Birnie has attempted to deal with over a century and a half of American economic history in a pocket-size book of 137 pages of text. Here and there certain spellings of proper names, an occasional statistical figure, look somewhat strange ; but on the whole the author has produced an accurate and, for its length, remarkably comprehensive handbook of information. The main shortcoming of the work is perhaps inevitable in so brief a treatment of an economy of such size, dynamism and complexity as that of the U.S.A.—the necessity for over-simplification. In seeking to give the " simple, straightforward account " which his preface promises, the author makes regular use of question-begging words and phrases and puts forward, as authoritative statements, views which are certainly not universally agreed upon and which ignore a great deal of dissentient literature.

The Humanitarians and the Ten Hour Movement in England. By RAYMOND G. COWHERD. Publication No. 10 of the Kress Library of Business and Economics, Harvard Graduate School of Business Administration, Boston, Mass. 1956. 27 pp.

It is unlikely that any essay on English factory legislation up to 1847 will break new ground. Professor Cowherd wisely makes no such attempt ; he recapitulates the story in a presentation well balanced except for the omission of the share of the factory inspectors, as we know it from M. W. Thomas' *The Early Factory Legislation.* The value of the present essay lies in the attention drawn to some of the less well known factory reformers, whose biographies have not been written : Joseph Brotherton, John Fielden, John Wood and Michael Sadler. A useful bibliography of the works of Fielden, Oastler and Sadler, which is appended, comes from the pen of Professor A. H. Cole.

World Economic Survey, 1955. UNITED NATIONS. New York. 1956. xi + 201 pp. 14s.

This latest volume, the eighth, in a series of comprehensive reviews of world economic conditions is perhaps the most valuable so far published.

It contains first an introduction surveying the post-war period as evidence for or against the theoretical possibility of balanced growth. This is developed in much greater detail in the three chapters of part I, one on the growth of production in the private enterprise economies, the second on the pattern of world trade and payments, and the third on the growth of production and trade in the centrally planned economies. These chapters provide a quite invaluable overall view of the whole post-war decade, both for those interested in the theory of growth, and for a wide range of applied economists. They also form the indispensable background to an appraisal of the recent world-wide industrial boom. Part II surveys these more recent developments, with the division this time between the industrial countries (which have boomed) and the primary-producing countries (which have not). With 108 tables and 21 charts, this survey is invaluable.

An African Labour Force. By W. ELKAN. East African Institute of Social Research, Kampala, Uganda. 1956. 59 pp. 8s. 6d.

The two Uganda tobacco factories investigated for this study manifest the typical problems arising with the factory employment of rural, tribalised, people. At the same time, one of the factories exhibits some unique features. The familiar, interconnected, problems of high turnover, low efficiency, and absenteeism are discussed, and causes and cures examined. Re-organisation of the firm's methods in selecting personnel, paying wages, etc., seem to go only a small way to diminishing migration of labour ; the causes are deeper-rooted. Unusual features at one of the factories are the employment of women and the provision of joint consultation facilities. Both experimental in E. African conditions, they give rise to an entertaining, as well as instructive, discussion. Mr. Elkan draws parallels with early nineteenth century Britain in his interesting study, with due allowance for the peculiarities of African society.

A Guide to Social Accounts. By CHARLES F. CARTER. Workers' Educational Association. London. 1956. 23 pp. 1s. 6d.

To have produced a clear introduction to social accounting for W.E.A. classes for less than the price of 10 cigarettes is a considerable achievement. Professor Carter has sought to relate this method of describing economic activity to the common experience of his audience and has even found space to describe what social accounts can tell us. The pamphlet can certainly be recommended as a useful complement to an introductory textbook on economic theory.

Policy Formation in Railroad Finance : refinancing the Burlington 1936–1945. By JOHN TETTEMER O'NEIL. Harvard University Press. London: Cumberlege. 1956. xii + 234 pp. 36s.

Dr. O'Neil approaches the problems of business finance from an unusual angle, from the inside rather than the outside. In this case study he examines the numerous problems which an actual business had to face. He analyses stage by stage the ideas, discussions, negotiations and decisions involved ; his expository style making the story relive. It will be of interest to students of business finance who want to know not only what financial arrangements are available, but how and why the choice is made. It is as he says " a test-tube problem from which can be distilled the essence of managerial practice ".

Functions of a World Food Reserve: Scope and Limitations. FAO. Commodity Policy Studies. No. 10. Rome. 1956. vi+ 77 pp.

Chronic malnutrition in many parts of the world, the possibility of sudden food shortages, excessive fluctuations of some agricultural prices, and surplus stocks of agricultural commodities in a number of countries, all appear to call for international action. The part to be played in this context by a world food reserve is ably discussed in the first and major section of this FAO report. It concludes that such a food reserve could help to solve each of the above-mentioned problems in isolation; that it could not, however, deal with them simultaneously because conflicting policies would be called for in the separate cases. A brief account of relevant international consultations and actions since the end of the war completes a useful addition to the FAO Policy Studies.

Der Verkehr als Integrationsfaktor der Europawirtschaft. By HUGO HEECKT. Kieler Studien, Kiel. 1956. viii + 106 pp. Dm.10.

Dr. Heeckt's monograph on " Transport and European Economic Integration " opens with a discussion of past efforts to co-ordinate—for the most part technically—national transport systems. This is followed by the main section of the study which deals with the type of transport policy to be adopted in an integrated European economy. The author argues that on the international, as on the national, level transport policy cannot be decided solely on the basis of economic criteria ; in fact, the basic implication of this study is the oft-reiterated contention that any measure of European economic integration will inevitably involve a large measure of co-ordination on the political level.

Die " Terms of Trade " und die Beschaeftigung. By PETER SCHERRER. Polygraphischer Verlag AG., Zurich. 1956. 155 pp. S.Fr. 13.80.

The interdependence of income and employment levels of countries trading with one another is usually analysed on the assumption of infinite elasticities of supply. This assumption is here replaced by that of finite supply elasticities so that prices as well as employment can vary. On this basis, the effects of different changes in demand and supply conditions on employment in the two countries and on relative prices—i.e. on the terms of trade—are examined in some detail. However, although some of the results are plausible, the analysis appears to rest on a number of very significant hidden hypotheses which unfortunately are so restrictive as to deprive the treatment of many of the advantages which the author claims for it. Therefore, this attempt to render the application of Keynesian analysis to international trade more realistic cannot be regarded as a success ; this is particularly regrettable because much remains to be done in this field.

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National Wage Policy in the Netherlands

By B. C. Roberts

I

The constant tendency for aggregate money wages to rise faster than total output in the post-war years has been cited frequently as the prime cause of the inflation from which the British economy has suffered during this period. The danger that unrestricted trade union pressure for higher wages would present to the maintenance of economic stability, under conditions of full employment, was stressed by Beveridge.[1] He considered that some form of national wages policy would be an essential feature of a full employment policy ; other economists have since emphasised the need for a greater degree of central control over wage movements.[2] The trade unions, employers and successive governments have, however, firmly rejected demands that free collective bargaining should be curtailed by anything more far-reaching than voluntary restraint. Appeals for restraint have been made at frequent intervals by government spokesmen, but the only serious attempt to persuade the unions and employers to co-operate in the carrying out of such a policy was made by Sir Stafford Cripps in February, 1948, with the publication of the White Paper on Personal Incomes, Costs and Prices.[3] Both sides of industry tried loyally to fulfil their pledges, but rising prices and the tightness of the labour market, which led to competitive bidding for workers and to higher earnings, eventually led the unions to end the agreement in the autumn of 1950. Since then the wage-price spiral has continued.

The problem of this spiral has also faced other countries and some of them have made attempts to grapple with it by means of a national wage policy. The boldest of these experiments has been made by Holland, a country one quarter the size of Britain, but having similar democratic traditions and facing similar economic problems. The development of post-war wage policies in the Netherlands is, therefore, of special interest.

II

Central control over the movement of wages in the Netherlands dates from the end of the Nazi occupation. Faced with a tremendous problem of reconstruction the government, with the support of employers and trade unions, decided that it could not allow wages to find their own level. It feared that to return to the pre-war system of unrestricted collective bargaining would result in an inflationary spiral and, possibly, social unrest that would endanger national recovery.

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[1] W. H. Beveridge, *Full Employment in a Free Society.*

[2] A. J. Brown, *The Great Inflation 1939–1951.*

[3] Cmd. 7321.

In May, 1945, trade union and employers' organisations announced the formation of a joint body to which they gave the name The Foundation of Labour. The roots of the Foundation of Labour stretched back to the aftermath of the first world war, when a Labour Board was set up to advise the government. In 1928 the employers' organisations entered into discussions on outstanding issues with the three central trade union organisations, Catholic, Protestant and Socialist, and this meeting was followed by further conferences from time to time. During the second world war, under the unifying influence of alien occupation, the two sides agreed to establish a permanent body to deal with the formidable problems likely to arise during the reconstruction period. The Foundation of Labour was quickly accepted by the government as an advisory authority on industrial and social problems and it has enjoyed, since its creation, a unique position in the making of social policy in the Netherlands.

The Foundation of Labour consists of an equal number of representatives of employers' organisations and trade unions and it is assisted by independent experts. The Foundation meets fortnightly and its interests embrace wages, social insurance, health and safety, productivity, technical training and employment. It does not include under its jurisdiction the broad issues of economic policy, though it cannot ignore factors that will inevitably affect the levels of employment, wages and prices. Thus, though its field of action is fairly clearly defined, there is no hard and fast limit beyond which it could not venture.

Many of the advances in standards of employment made in the Netherlands during the past decade have emanated from policies adopted by the Foundation of Labour. The establishment of the Foundation had the consequence of virtually transferring collective bargaining from the industrial to the national level. This development was facilitated in Holland by the structure of the trade union movement, which reflects the social divisions in the country. These run along religious lines, and in most industries and trades workers belong to Catholic, Protestant or "neutral"[1] organisations. Thus there are three trade union federations, each of them firmly cemented together by deeply held religious or social principles. The ideological characteristics of the British trade unions are of a different kind, the common interest is centred more firmly on industry, and this results in a far more powerful inclination towards industrial autonomy than is the case in Holland.

The Foundation of Labour has no legal power ; it is purely a voluntary body. Legal responsibility for making and enforcing wage policy is vested in a Board of Mediators appointed by the Minister of Social Affairs. The functions of the Board have been to establish the general principles governing wage changes ; to validate collective agreements ; to declare agreements binding and to determine their scope ; to fix general wage levels, establish differentials and lay down other conditions of employment. The Minister may issue directives to the Board, and this is done on such questions as a change in the general level of wages or in cases of other changes that are likely to have an important effect on the economy as a whole.

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[1] Mainly Socialist.

The Board of Mediators does not, however, arrive at its decisions in isolation, since under a decree of 1945 it must consult with the Foundation of Labour before promulgating any change. In practice it has generally accepted decisions arrived at by the Foundation, since they have been determined in the light of government pronouncements and policy.

In 1950 the Netherlands government decided to establish a Social and Economic Council that could advise it on the wider problems of social and economic policy. The Council is composed of persons nominated by the trade unions, employers' organisations and the government. This body, which is now the principal adviser to the government on the broad issues of wages policy as well as on other economic and social questions, supplements rather than supersedes the work of the Foundation of Labour.[1]

III

The primary objectives which it was hoped would be achieved by the adoption of a National Wage Policy in the Netherlands were (1) the maintenance of economic stability by controlling the general level of wages, and (2) the establishment of equitable and satisfactory wage differentials between different occupations. It was agreed by all parties to the policy that, in principle, wages should be determined in the light of prevailing economic circumstances and estimated future developments. This end was to be secured through the institutional arrangements described, instead of by the pulls and shoves of employers and unions in an oligopolistic labour market. It was also believed that the " crude " forces of supply and demand could be replaced as the determinants of wage relationships by a " rational " calculation based on a sophisticated analysis of occupational differences. How far success in the attainment of these objectives has been achieved will now be examined.

The first step that was taken, when the National Wage Policy was introduced, was the establishment of a national minimum wage for unskilled adult workers at a level that would enable a man to maintain a family of four at a reasonable subsistence standard in the prevailing economic circumstances. Semi-skilled workers' wages were fixed at ten per cent., and skilled workers' wages at twenty per cent. above the level set for the unskilled workers. In order to allow for differences in the cost of living the country was divided into five zones and wages were graded accordingly. Thereafter, until 1950, these wage levels were raised by a percentage figure that was approximately equal to the rise in the cost of living. Thus real wages were kept more or less stationary in the immediate post-war years, though a substantial improvement in the standard of living occurred simply because shortages and restrictions on consumption gradually disappeared and rationing was abolished.

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[1] For an account of the relations between these bodies and the way in which they have discharged their functions, see M. G. Levenbach, " Collective Bargaining in the Netherlands ", *Modern Law Review*, October 1953.

The restoration of the Netherlands economy was threatened with a serious check when the Korean conflict began, since the change in the terms of trade brought about by the tense international situation led to a considerable deterioration in the balance of payments.[1] In addition the rearmament programme that was made necessary by the international situation substantially increased the burden of expenditure on defence. Since the economic stability of the country appeared to be in danger the government, with the agreement of the unions and the employers, decided to reduce real wages. This was accomplished by allowing prices to rise in 1951 by ten per cent., but only permitting wages to rise by five per cent. Part of the increase in prices was deliberately brought about by a drastic cut in subsidies and the imposition of taxes on luxury goods and motor vehicles.

These measures were not, however, regarded as adequate to protect the economy from inflation and a substantial reduction in investment was also decided upon. This was tackled by the issue of regulations calculated to reduce gross profit margins. The profits tax was raised and a drive was launched to collect the substantial arrears of taxation owed by private companies. The bank rate was raised by one per cent.; a system of quantitative credit controls was introduced; and the capital market was further squeezed by a series of government loans. In addition to these financial measures expenditure on house building was reduced by restrictions on the issue of building licences. The government's policy was consolidated by its own resolution in cutting down the volume of money created on its behalf.

The effect of these determined actions was to check the inflation and to turn, in twelve months, an adverse balance on current account with the rest of the world into a very healthy surplus. Prices, which had risen in 1951 by ten per cent. over the previous year, were stabilised, but unemployment, which had been 2·0 per cent. in 1950, rose to 3·5 in 1952. In spite of the increase in unemployment and a check to production in 1952, a considerable expansion in output was secured in the following year ; the gross national product was 14 per cent. greater, at constant prices, in 1953 than it had been in 1950. Wages, however, were successfully limited to an increase which, in 1953, only restored purchasing power to the level of 1950.

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[1] Changes in the terms of trade tend to affect Holland to an even greater extent than the United Kingdom, since imports, measured in relation to gross national product, are twice as high as in this country.

By 1953 it was apparent that the crisis was over, though the government was reluctant to relax its stringent policy too quickly lest it should undo the good that had been done. Anxiety about the level of unemployment led it, however, to take steps to encourage more investment, but it continued to resist large-scale wage advances. Pressure for a substantial wage increase mounted, but it was not until January, 1954 that the government finally agreed to a general rise of 5 per cent., and permitted an additional increase of 2 per cent. to skilled workers. The unions were not satisfied with the improvement in wages granted ; they felt that work-people were entitled to a greater share of the rising tide of prosperity and soon pressed for a further advance. In October, 1954 permission was given by the Board of Mediators for another general wage increase of 6 per cent.; this advance was for the first time not based on a rise in the cost of living, but was deliberately intended as an increase in real wages.

Although there was some over-lapping of functions the institutional arrangements seem to have worked reasonably smoothly until the conflicts of 1954. In that year the Foundation of Labour recommended that the powers of the Board of Mediators should be transferred to a standing committee of the Social and Economic Council. Behind this proposal there lay a dispute over the basic principles upon which, up to that stage, wages policy had been determined. Though it was generally accepted in the Netherlands that the control of wage movements by the government had helped considerably in the immediate post-war years, criticism from the employers and a section of the unions began to grow from the end of 1952.[1] Pressure for relaxation might have come earlier had it not been for the economic crisis engendered by the Korean War boom.

It was, perhaps, not unnatural that as memory of the war receded and Holland emerged from the period of reconstruction the unity of opinion upon which the national wages policy was founded should have gradually given way to a hankering for more freedom on the part of the employers. They began to feel that their right to fix wages without the permission of the government should be restored, if not entirely, at least to a much greater extent than had been the case since 1945. Dissatisfaction was also voiced by the Christian trade unions, and even in the " neutral "—mainly socialist orientated —unions, which remained in support of economic planning and the maintenance of a government controlled wage policy, the feeling grew that changes in the system ought to be made.

At first the government was not in favour of the suggestion that the powers of the Board of Mediators should be transferred to the Social and Economic Council ; when, however, after an acute conflict, a majority of the Social and Economic Council recommended the adoption of the proposal, the government announced that it was " prepared in principle to move in the direction of transferring powers in the field of wage policy to organised trade and industry as represented in the Social and Economic Council ".[1] The Minister of Social Affairs also stated at the same time that the government would instruct the Board of Mediators to consider other fundamental changes in the principles upon which wages had hitherto been determined.

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[1] See B. Zoeteweij, " National Wage Policy : The Experience of the Netherlands ". *International Labour Review*, Vol. LXX, No. 2, February, 1955.

A crisis was reached when, after the two very prosperous years of 1954 and 1955, in which every segment of the economy expanded rapidly, the government, seeking to curb a further rise in wages and prices, again came into conflict with the unions. The unions claimed that the share of wages in the national income had fallen and that on this score they were entitled to a further rise. Faced by this demand the government requested the Social and Economic Council to hold an inquiry into the validity of the argument ; it also asked the Council to take into account the fact that controlled house-rents would be allowed to rise in 1957 and that in the same year workers would be called upon to pay old age pension insurance premiums. The Report of the Council confirmed that officially determined wage rates had lagged to some extent, but that earnings per capita had risen by the same amount as the national income per capita.[2] On the basis of the Report it was finally agreed, after prolonged negotiations, which almost ended in the collapse of the Foundation of Labour and of the whole system of wage controls, that a maximum lump sum payment of 3 per cent. of the annual wage should be made for the year 1955, and that in addition each industry should be allowed to raise its wages up to a maximum of 6 per cent. When the government approved these recommendations in March, 1956, it did so on condition that the lump sum payment was not passed on to prices, and also that price increases in respect of the permitted 6 per cent. further rise would only be allowed if the increase did not exceed 3 per cent.

In fact, in 1956, industrial wages rose by a little more than 3 per cent. over the average of 1955, but by January, 1957, as a result of increases allowed, industrial wage rates had risen by 11 per cent. over the level of the previous January.[3] It was expected that much of the increase in wages would be at the expense of profits and there is evidence that to some extent this has occurred. Prices were, on the average, less than 2 per cent. above the average of the previous year, but there was a sharp rise at the beginning of 1957; by February of this year the index of retail prices had reached a level of 9 per cent. above the figure at which it had stood in January, 1956.

During the summer of 1956 the Netherlands government took steps to curtail the demand for money ; interest rates were raised and in

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[1] *Amsterdamsche Bank Quarterly Review*, No. 111, Fourth Quarter, 1955.

[2] There was an unresolved dispute as to the validity of the conclusions which arose over the correctness of the base date used.

[3] *Maandschrift*, February, 1957.

June restrictions were placed on hire purchase buying. With all the signs pointing to another bout of inflation the government decided, in the late autumn of 1956, that a more resolute effort to curb the new spiral of rising prices and wages must be made. Following discussions in the Social and Economic Council between the employers, the unions and the government, it was announced in December that an agreement had been reached on a stabilisation programme to be introduced on January 1, 1957. Under this agreement the trade unions undertook not to seek wage increases to compensate for increase in prices that might be brought about by the abolition of certain subsidies and further increases in taxation. It had been thought earlier in the year that the government would agree to a rise in wages to cover the cost of insurance premiums that Dutch workers will be called upon to pay for an improved old age pension scheme that is to be introduced in 1957, but the unions have apparently agreed not to insist that this should be done provided that the contribution burden is allocated to their satisfaction between employers and workers. It has been agreed, however, that wages should go up by 2 per cent. in view of the decision to allow controlled rents to rise by 25 per cent. in 1957. The employers in their turn agreed to accept the principle that no prices would be raised without securing the approval of the government. At the same time the Ministry of Economic Affairs announced price ceilings on many goods and services. It is expected that on its part the government will accept the recommendation of the Social and Economic Council that it should cut its spending by 200,000,000 guilders ; the private sector of the economy it is hoped will reduce its expenditure by a further 500,000,000 guilders.

Thus the Netherlands government has again had to take vigorous steps to restrict the tendency for money incomes to rise faster than the economy can bear. But in order to win the co-operation of the unions it has had to agree to the introduction of direct controls to prevent prices from rising. What is more important is that it has not shirked taking a stiff dose of its own medicine, and it has also indicated that it will not hesitate to introduce further measures to curtail demand if they should prove to be necessary.

IV

The most important feature of the award of March, 1956 was that it modified one of the cardinal principles of the national wage policy as previously carried out. Hitherto wage differentials had been based on a national system of job evaluation and no allowance was made for the ability of one industry to pay a higher wage than another on purely market considerations. In the Report mentioned above the Social and Economic Council recommended that in future it should be possible for enterprises to diverge from compulsory wage regulations, and in effect the 6 per cent. permissive award was also recognition of the need for greater flexibility as between industries.

That the Netherlands authorities should have been compelled to make these concessions to factors they had sought to exclude from consideration in wage determination is an extremely significant event, since it clearly shows the limitations of the assumptions on which the advocates of a national wages policy had based their criticism of free collective bargaining. The abstract conception of social justice which had been at the heart of the attempt to scientifically coordinate wages had not provided either workers or employers with the satisfaction anticipated.

The founders of the Netherlands wage system held the opinion that it was socially and economically undesirable that wage standards should be based upon such differences as might occur in the profitability of enterprise, the supply and demand for labour, the bargaining strength of unions and employers and historical accident and tradition. It was felt that a stable system of wages could only be established on a basis of equity as determined by a scientific calculation of the content of each job, the conditions under which it was performed and the circumstances of the performer. Thus the foundation of the Netherlands wages policy rested upon the notion that work should be rewarded according to social rather than economic criteria.

In order to establish this new basis for fixing wage differentials a committee of experts (Commission for Normalisation) was set up to develop a comprehensive scheme of job evaluation and work classification. The method adopted involved the grading of jobs throughout industry according to a series of factors such as knowledge required, dexterity, care, responsibility, physical effort, risk of accident, etc.[1] Points were then assigned according to the extent to which the factor applied to each job. The next step was to grade each job within a series of broader classifications and to convert the points rating into wages. Each employer had to comply with the basic wage rates as laid down in the regulations, but the detailed application of the standard scheme of job evaluation to particular industries was not made compulsory ; its complete adoption was left to the voluntary decision of the employers and unions concerned.[2] Since the wages policy involved not only the control of minimum, but also maximum wages, any change in wage structure had to be ratified by the Board of Mediators. Evasion would have been a comparatively simple matter had the regulations been confined to basic wage rates, and control had, therefore, to be extended to cover every kind of allowance, bonus or payment for overtime and shift work, holiday pay, pension and welfare schemes. Piece rates were permitted so long as they did not exceed rather narrow limits and special arrangements were made for time workers to benefit by an approved system of merit rating. Thus every aspect of wages was subject to regulation, and determined according to a national policy.

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[1] A. N. van Mill, "Job Classification in the Netherlands", *International Labour Review*, February, 1949.

[2] There are about 200 separate industrial groups for which regulations have been made. In addition the Board has to deal with separate wage schemes for individual enterprises not belonging to an industry covered by a general regulation, and for numerous individual enterprises with exceptions from the general rules of their industry ; altogether about 6,000 "individual" cases per annum. Levenbach *op. cit*

The introduction of job evaluation resulted in the breaking down of the main categories of skilled, semi-skilled and unskilled work, on which the broad pattern of differentials was based, into numerous sub-groups. This refinement in the structure of wages does not appear to have made any significant alteration to the differentials between the three main groups as the following tables show. There was a narrowing of the differentials between 1939 and 1947, but thereafter there was little change.

Index of Average Weekly Earnings of Adult Male Workers in Industry*

	skilled	semi-skilled	unskilled
1939	100	100	100
1947	186	199	213
1947	100	100	100
1948	106	106	106
1949	107	107	108
1950	117	118	118
1951	126	125	125
1952	129	130	130
1953	134	133	133
1954	156	154	154
1955	161	160	161

* Source: *Statistiek der lonen.*

Average Weekly Earnings of Adult Males (in Guilders, and as Percentages of Skilled Earnings)*

	skilled	semi-skilled	unskilled
1939	26·35 100%	22·64 86%	20·20 77%
1947	49·02 100%	45·07 92%	43·04 87%
1955	78·93 100%	72·22 91%	69·52 88%

* Source: *Statistiek der lonen.*

Average hourly earnings of women workers as a proportion of male workers' earnings have fallen from 62 per cent. in 1947 to 60 per cent. in 1955.[1] This slight change is in the opposite direction from that of the United Kingdom, in which the average hourly earnings of women workers in manufacturing industry rose from 58 per cent. in 1947 to 60 per cent. in 1955.[1] It is difficult to believe that the fall in the proportion of women's earnings was deliberately contrived in the Netherlands, since this would hardly be in harmony with the general principles of the National Wage Policy. The fall is probably due to factors in the labour market that could not be offset.

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[1] *Statistiek der lonen*, October-December, 1955

The general pattern of differentials which these figures reveal does not appear to differ markedly from that which has emerged in other countries. Though on this point data for this country are meagre, it seems that the narrowing process has gone farther in the Netherlands than in the United Kingdom. This is not, however, entirely the consequence of the National Wage Policy since the trend was well established long before its introduction. It is possible that the trend would have gone further had a national wage policy not been pursued, but since there has developed in recent years a pressure in favour of widening differentials it may well be that the centralisation of wage determination has latterly prevented a shift towards wider differentials.

Whatever effect the national wage policy might have had on wage relationships, the interference with the freedom of employers and workers mutually to make readjustments has steadily grown more onerous. One of the principal architects of the Netherlands wage policy has admitted that " a system of wage control by a central board is more rigid than a system of free wages. Moreover it is of necessity more long-winded and clumsy. Also the Board at the top tends to be far away, impersonal and a more or less nebulous entity."[2] These are big disadvantages to overcome and it is not surprising that this authority should write " everybody constantly expresses a hope for more freedom and for the lessening of controls ".

It would be wrong to conclude that the efforts made under the ægis of the Foundation of Labour by employers and unions to reshape the structure of wages in the Netherlands had been fruitless. The wide application of the standard method of job evaluation developed by a committee of experts (the Netherlands Commission for Normalisation) has almost certainly resulted in better intra-firm wage structures. In addition it has also probably contributed a great deal to the considerable rise in productivity achieved in the Netherlands during the past few years.[3] Whenever a systematic job analysis is done it always brings to light inefficiencies that were not obvious even though suspected. On the basis of the information obtained it is often possible to secure agreement to changes that would in other circumstances be resisted.

[1] *Ministry of Labour Gazette*, September, 1956.

[2] Levenbach, *op. cit.*

[3] The index of industrial production has risen in the Netherlands on the basis of the average of the years 1937-1938 from 100 to 118 in 1948 and 200 in 1955. On a comparable basis the index for industrial production in the U.K. had reached 115 in 1948 and 160 in 1955 (*OEEC Statistical Bulletin*, General Statistics). The difference between the two countries is far less great if output per worker is compared. In 1952 the productivity of labour in the Netherlands was still below 1938 in spite of the immense progress in economic reconstruction. Since 1952 the output per worker in the Netherlands has reached and perhaps surpassed that of the U.K.

Thus the intensive use of work study for the purpose of achieving an equitable wage structure has been of great benefit to industry in the Netherlands, in spite of the fact that the primary objective, as conceived, has proved to have serious disadvantages.

V

The movements of wages and prices in the Netherlands and United Kingdom are compared in the table below. Statistical series of wages and prices are notoriously treacherous instruments of measurement when used to compare the experience of different countries. It is possible, however, to draw significant conclusions about the magnitude of change over the time period, even though the data from which the series are compiled are not exactly comparable.

Wages and Prices[*]

	Industrial[†] Wage Rates Adult Males		Industrial[‡] Earnings Adult Males		Prices	
	Netherlands	U.K.	Netherlands	U.K.	Netherlands	U.K.
1947	100	100	100	100	100	100
1948	105	103	105	107	103	108
1949	109	107	109	111	109	111
1950	116	110	117	115	118	114
1951	125	121	126	123	130	125
1952	128	130	131	136	132	136
1953	130	136	133	144	132	140
1954	144	141	148	152	137	143
1955	151	149	159	165	138	149
1956	156	160	166 June	179 April	142	157

[*] Sources: *Sociale Maandstatistiek*; *Statistiek der lonen*; European Productivity Agency, *Trade Union Information Bulletin*, Supplement No. 10; *Ministry of Labour Gazette*.

[†] Wage rates for the Netherlands are based on hourly data, but for Britain on weekly data.

[‡] Hourly.

In spite of the very different institutional arrangements in the two countries it will be seen that the movement of wage rates has been remarkably similar over the whole period concerned. Earnings have tended to pull away from wage rates in both countries, but to a much greater extent in Britain. Some allowance must be made for the Netherlands' figures of earnings understating the real extent to which total earnings have in fact gone up, since it is known that employers have not always kept within the regulations. However, when account of this fact has been taken, it is clear that wage costs have risen faster in this country than in Holland. This may well have been due far more to the greater freedom enjoyed by British employers to set their wages at levels that reflected the demand for labour than to the pressure of the unions. British employers have not required a national wages policy to keep wage rates at comparable levels with the Netherlands, but they have not been able to curb their own willingness to pay more to obtain the labour they required. Many of the practices associated with this policy, in particular the emphasis on overtime, have resulted in high labour costs and encouraged slackness and inefficiency. The price index figures clearly indicate that since 1951 inflationary pressure has been more successfully kept under control by the Netherlands government.

It is not possible, however, to conclude that the difference in the experience of inflation in the two countries has been due solely to the existence of a national wage policy in the one and its absence in the other. The stringent measures taken by the Netherlands government to curb the expansion of credit and government expenditure might well have played the more important role. Had there, in fact, been no centralised control over wages it is possible that over the period wages and prices would not have risen to any greater extent. It is clear that when the adjustment of wages to market levels of demand is prevented by regulation this can be only a temporary phenomenon. The same rapid advance in wages was experienced in the Netherlands in 1954 and 1956, following a period of strict wage restraint, as occurred in Britain in 1951 and 1952. When the brakes are released, as they are bound to be after a time, if excessive friction is to be avoided, there comes a rapid surge forward that restores the general wage level to the trend determined by the fundamental economic forces.

The periods in which wages have risen most rapidly in Britain and the Netherlands in the post-war years have been periods in which a re-stocking and investment boom was under way. This conjunction was a feature of the inflationary expansion which occurred in Britain in 1946-1947, 1951-1952 and 1955-1956, and in the Netherlands in 1951, 1954 and 1956.[1] It was the rising demand for resources that created the conditions under which the supply price of labour could be pushed up by the unions. When it was necessary to check the expansion, because of the deterioration in the balance of payments, investment was choked off and stocks were drawn down. If this had not been brought about by various measures there would have been no fall in the demand for labour and wage regulation would not have worked. Indeed, regulation and restraint collapsed when stocks had to be rebuilt and new investment expanded.

Neither wage regulation in Holland nor wage restraint in Britain has been a substitute for a disinflationary financial and budgetary policy, but it has been a useful supplementary aid to the more fundamental measures that have been used to check the expansion of demand. The primary lesson to be learnt from the experience of the Netherlands is not that a centralised system of wage control is an effective means of preventing inflation, but that stability can only be achieved by a resolute and persistent control of the factors that lead so easily to an over-rapid expansion of industrial demand. There has been less inflation in the Netherlands because the government, supported by the employers and the unions, has pressed its disinflationary economic policies harder—to the extent of creating more unemployment—than has the British government at any time since the end of the war.

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[1] F. W. Paish, "Price Stability and Full Employment", *Clare Market Review*, Summer, 1956.

O.E.E.C. Statistical Bulletin, General Statistics, November, 1956.

The adoption of a centralised system of wage determination is only compatible with free trade unionism and free enterprise so long as it responds to the economic and political pressures that are generated in a free society. What is altered when wages are determined by a central body is the manner in which collective bargaining takes place. In the Netherlands, bargaining was not eliminated with the establishment of the Foundation of Labour and the Social and Economic Council ; it was simply transferred from the industrial to the national level. It is possible, as many supporters of the National Wage Policy in the Netherlands would argue, that this was to the good, since it meant that wages were determined less independently of economic reality than would have been the case under sectional bargaining. However, it is also possible, under the centralised system of bargaining, for the unions to insist on the government adopting, as the price of their acceptance of temporary wage restraint, policies that permit an over-rapid expansion of income at a later stage. Ultimately the outcome of a system of bargaining, whether it be a centralised one like that adopted by the Netherlands, a decentralised one like that of Britain, or an even more decentralised one like that of America, will depend on the power of the contending factions. If the unions are strong and the general economic and political circumstances are favourable, they will be in a position, whatever the formal institutional arrangements through which collective bargaining is carried on, to push wages to levels which in conjunction with investment demand make inflation inevitable. If the unions do not push hard enough the employers will pull the level up themselves.

From the evidence examined it would seem fair to conclude that the centralisation of wage determination in the Netherlands has brought some advantages, but that these have not been as great as the supporters of a national wage policy have often claimed. Neither the problem of inflation nor the problem of wage structure has been satisfactorily solved. The results achieved offer little promise that a similar system, if adopted in Britain, would prove to be the answer to the difficulties that beset this country.

It has been questioned whether the National Wage Policy has been the factor most responsible for the slightly better control of inflation achieved by the Netherlands in the post-war period. It is also possible to question the oft-made claim that the Netherlands system of wage determination has been responsible for a vast improvement in industrial relations.[1]

It will be seen from the following table that the number of disputes during the post-war years fell sharply after 1951. It is tempting to attribute this improvement in industrial relations to the system of wage determination, but it must be noted that a similar improvement occurred in the 1930's in quite different circumstances. It is also significant that the number of working days lost rose in 1956 to a level almost three times greater than the average of the period from 1951.

	Average number of Disputes per year		Average Number of Working Days Lost per year	
	Netherlands	U.K.	Netherlands	U.K.
1926–1930 ..	220	357	446,100	32,259,000
1931–1935 ..	184	438	644,000	3,497,000
1936–1939 ..	105	940	81,500	1,957,000
1946–1950 ..	184	1,690	293,700	1,946,000
1951–1956 ..	69	1,871	88,800	2,305,000

Source: Central Bureau voor de Statistiek: *Jaarcijfers voor Nederland.*
Ministry of Labour Gazette.

By comparison with Britain the Netherlands has an enviable record of industrial peace during the past six years; but it is difficult to prove that this favourable situation is due entirely to the difference in methods of wage settlement. Since the number of working days lost per thousand employed was substantially lower in Holland before the war, it is likely that more fundamental economic and social factors were the principal causes of the trends in the two countries. This is not to suggest that the post-war system of wage determination has had no impact on industrial relations. Employers and unions in the Netherlands have shown themselves willing and able to accept responsibilities to the community as a whole but, like their counterparts in Britain, they have shown that there is a point beyond which they are not prepared to sacrifice their sectional interests.

The London School of Economics.

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[1] Cf. P. Brandes (Secretary of the Foundation), "The Netherlands Labour Foundation", *The Manager*, October 1955.

The British National Debt[1]

By E. GWEN JONES and EDWARD NEVIN

PART I

1. INTRODUCTION

The statistics bearing on the public finance of the United Kingdom are a curious collection. In many ways they provide information in an almost incredible degree of detail—for example, in the *Civil Estimates* and *Appropriation Accounts* published each year. At the same time, even material of this kind, which lacks nothing in the way of detail, is seldom presented in a form which would be considered nowadays to be the most useful or illuminating one, largely because of the extreme reluctance of the British civil service to depart from traditional methods of presentation, however inappropriate they may have become. Until recent years, for example, even the Chancellor of the Exchequer indulged in the practice of submitting his own " conventional " account of revenue and expenditure to considerable manipulation before employing it to arrive at the true budgetary position (i.e. it was converted to the " alternative classification "). For inclusion in the national income accounts, the official budget data have to be put through a second, and even more drastic, process of manipulation.[2]

Regrettable as these peculiarities of published statistics undoubtedly are, the position of the outside observer is infinitely worse in the context of a wide range of official transactions (especially those which do not date back to the less secretive days of the 18th century) for which no statistics whatever are published, or for which only material of a fragmentary nature can be found scattered over a wide range of diverse publications. For expenditures such as those of the defence departments, the paucity of the statistics provided has an obvious enough explanation, but the secrecy concerning agencies such as the Exchange Equalisation Account or the National Debt Commissioners (even in connection with operations concluded several years previously) is difficult to understand.[3] Although it is not strictly an official agency concerned with public finance, the Bank of England is an especially bad offender in this regard. Its weekly return, identical in form with that of 1844, continues to include items which are now virtually devoid of meaning, while its annual report must contain less information per square inch than that of any other central bank in the world.[1]

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[1] A paper related to this article was read before a seminar at the London School of Economics in 1956, and the article has benefited considerably from comments expressed on that occasion, especially by Professor F. W. Paish and Mr. J. Wiseman. The authors are also greatly indebted to Mr. Ralph Turvey for comments on an early draft of the article.

[2] These various adjustments, and other peculiarities of the British Exchequer returns, are fully discussed in J. R. Hicks, *The problem of budgetary reform*, Oxford University Press, London, 1948. See also *National Income Statistics: Sources and Methods*, Studies in Official Statistics No. 3, H.M.S.O., London, 1956, Chap. VIII, pp. 181-4. (This publication is referred to in what follows as *Sources and Methods.*)

[3] Incredibly, there exists on record an apparent admission by a highly-placed civil servant that in the case of at least one official agency (the National Debt Office)

One of the many casualties in this statistical *mêlée* is our knowledge of the precise development of the rôle of the national debt in the British economy. The official returns most directly involved—the annual publications *Finance Accounts of the United Kingdom* and *National Debt*—provide, in considerable detail, information about the nominal value of each government security outstanding and the interest paid thereon.[2] These returns also provide great detail about the estimated assets of the government.[3] About the distribution of the national debt amongst various groups of holders, however, no official data whatever are published, and so far as the authorities are concerned the outside observer must content himself with (*a*) the weekly Floating Debt return, showing the volume of Treasury bills outstanding and Ways and Means Advances by Public Departments and the Bank of England, (*b*) the nominal total value of the government securities held by the Bank of England—care being taken that no hint is given of how much of this total represents, say, tap Treasury bills and how much, say, 2½ per cent. Treasury Stock (1975 or after)—and (*c*) the nominal value (and occasionally the market value) of securities held by the various " departmental funds " (most of which are administered by the National Debt Commissioners), care again being taken to minimise the usefulness of these statistics by issuing details of most of them in

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the motive for this veil of secrecy was precisely what the nasty-minded had suspected—i.e. that of preventing the general public (whose funds it was manipulating) from knowing what was going on. A comprehensive statement of the activities of the National Debt Office, said Sir Bernard Gilbert in evidence before the Committee of Public Accounts, might be " rather an unfortunate thing to put out in the sense that it would enable people perhaps to form their own judgements as to what was going on and what was likely to happen ". (*First, Second and Third Reports from the Committee of Public Accounts*, 1951-52, H.M.S.O., London, 1952, Q. 5722, p. 506). If it was the professional operator on the Stock Exchange that Sir Bernard had in mind here, it is singularly unfortunate that he did not say so.

[1] For the student of British monetary matters, the contrast between the information published by the Bank of England and that published in the monthly *Federal Reserve Bulletin* is painful to contemplate.

[2] Except that the outstanding volume of tap—as distinct from tender—Treasury bills is still treated as a closely guarded secret, despite the definitive cracking of this particular crib many years ago by Professor Frank Paish. (See F. W. Paish, *The post-war financial problem and other essays*, Macmillan, London, 1950). The interest paid on tap bills is another State Secret, but a reasonable approximation to it can be obtained without undue difficulty (see E. Nevin, " Some facts about tap Treasury bills," *The Banker*, Vol. CIV, No. 348, January 1955, pp. 46-50).

[3] Almost all this information (and much from other sources) is brought together in an erudite volume of statistics bearing on the market in gilt-edged securities, *British Government Securities in the Twentieth Century* (privately published by " a leading firm of gilt-edged brokers ", Second edition, London, 1950, and Supplements, July 1952 and October 1955). In what follows this publication is referred to as *British Government Securities.*

reports which refer to a wide selection of different accounting dates.[1] The authorities publish nothing concerning the securities held by the Exchange Equalisation Account. Nor is any attempt made to compile estimates of the distribution of the debt amongst the main groups of holders (or, at least, the results of such attempts are never published) although the Bank of England, with its registers of the various government securities and other relevant data, is obviously in a unique position to make such estimates from a sample basis if nothing more.[2] Estimates of this kind are a regular feature of the statistics published at frequent intervals by the central banks of other countries which presumably attach less importance to unnecessary secrecy and *mystique* than appears to be the case in Threadneedle Street.[3]

The aim of this article is therefore to bring together the collection of published data, scraps of evidence and guesses of varying degrees of reliability which constitute the sum total of our knowledge of the major aspects of the national debt. Since the transfer aspects of the debt are generally held to be the main issues raised by its existence,[4] the bulk of the article will be concerned with the evidence available concerning the distribution of the debt itself and of the interest payments made on it annually. It may be useful, however, to give a brief summary first of all of the items which comprise the national debt at the present time.

II. The Structure of the Debt

Broadly speaking, the national debt can be classified into four categories—funded debt, floating debt, other unfunded debt and debt payable in external currencies. The change in the relative importance of each of these categories since 1900 is shown in Table 1.[1] The

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[1] Since 1951 the total value of departmental holdings at March 31st has been given in an appropriately obscure footnote to the annual return *National Debt* (see e.g. *National Debt*, Cmd. 9521, H.M.S.O., London, 1955, p. 9). The estimated holdings of the National Debt Commissioners are conveniently brought together and shown in detail in *British Government Securities* cited in footnote 3 on the preceding page, but this is, of course, very much a non-official publication.

[2] It is true, of course, that the Bank could not provide data concerning the distribution of the debt amongst various *income* groups—a point which seems to have impressed the writers of the Minority Report of the Colwyn Committee (*Report of the Committee on National Debt and Taxation*, Cmd. 2800, H.M.S.O., London, 1927, p. 359, para. 23). Estimates of the distribution amongst persons and the various types of institutions, however, should provide no insuperable difficulty, and with the data currently available about the size and structure of estates assessed for death duties it would be possible to form a fairly shrewd estimate of the distribution amongst income groups.

[3] See for example, the data published monthly in the *Federal Reserve Bulletin* (pp. 968-9 in the issue for September 1956), quarterly in the South African Reserve Bank's *Quarterly Bulletin of Statistics* (Table XXVI in the issue for September 1956), and annually in the Commonwealth Bank of Australia's *Statistical Bulletin* (p. 35 in the issue for October 1956), to name only three at random. A survey of the statistics available in some 23 countries on the question of the ownership of public debt is presented in *International Financial Statistics* (International Monetary Fund, Washington), Vol. V, Nos. 7-8, July-August 1952 ; the statistics for the United Kingdom do not make an impressive showing in this comparison.

[4] See H. Dalton, *Principles of Public Finance*, fourth edition, Routledge, London, 1954, ch. XXII ; U. K. Hicks, *Public Finance*, Cambridge University Press, London, 1947, ch. XIX, pp. 363-4. It can be argued, however, that the national debt raises a good many other issues at the present time ; see E. Nevin, *The problem of the national debt*, University of Wales Press, Cardiff, 1954, *passim.*

TABLE I

THE NATIONAL DEBT, 1900–56*

Type of debt	1900		1920		1938		1956	
	£ mn.	%	£ mn.	%	£ mn.	%	£ mn.	%
Funded debt	553	88·0	315	4·0	3,365	41·3	3,809	14·0
Floating debt	16	2·5	1,312	16·7	842	10·3	5,083	18·8
Other unfunded debt	60	9·5	4,979	63·6	2,905	35·7	16,155	59·6
External debt	—	—	1,230	15·7	1,032	12·7	2,075	7·6
TOTAL ..	629	100·0	7,836	100·0	8,144	100·0	27,122	100·0

*Source: *National Debt* Return. Terminable annuities are classified here as unfunded debt, while no account is taken of the "Other capital liabilities" (such as government guarantees under the various Telegraph Acts) which are not part of the national debt proper.

funded debt—that is, debt in respect of which the government has incurred no obligation of capital repayment on or by a specified date—is now a relatively small part of the total. This is a state of affairs which is in sharp contrast with that at the beginning of the century, or, for that matter, immediately before the second World War. The explanation of this decline in the relative importance of the funded debt in recent years, of course, is that its absolute size rose only slightly over a period in which the debt as a whole was trebled. At the present time the entire funded debt takes the form of securities quoted on the London Stock Exchange[2] except for the government debts incurred to the Bank of England between 1694 and 1746 (£11·0 million) and to the Bank of Ireland between 1782 and 1821 (£2·6 million). About

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[1] The figure shown for the total debt in Table I is the gross amount outstanding—i.e. it includes debt held by all government agencies. The official returns usually show this total followed by a *net* total, the latter being obtained by subtracting the holdings by the National Debt Commissioners of 4 per cent. Victory Bonds and 4 per cent. Funding Loan, 1960-90, on behalf of the Death Duties (Surrendered Securities) Account. Under the terms of issue of these securities in 1919, both may be surrendered in lieu of death duties—Funding Loan being accepted at its issue price of £80 and Victory Bonds at par. The securities so received by the National Debt Commissioners are not cancelled, although under the Finance Act of 1928 no further interest is paid on them by the Exchequer. Logically there is no reason why such debt should continue to appear in the returns. The reason for the curious accounting procedure whereby such securities are not cancelled but continue to be including in the nominal amounts outstanding is presumably that, since a cumulative Sinking Fund was established for both securities (the Victory Bonds to be repaid being determined by lot), the cancellation of surrendered securities would falsify the redemption-probability distribution attaching to the securities at the time of issue (including those subsequently transferred for death duties, which are equally subject to the sinking fund provisions). One would have thought there was a simpler way of achieving this end.

[2] 3½ per cent. War Loan (1952 or after) accounting for almost exactly 50 per cent. of the entire funded debt.

£23·5 million of the debt is in the form of 2½ and 2¾ per cent. perpetual annuities issued between 1853 and 1884 in exchange for various 3 per cent. stocks then outstanding.

The *floating debt* is usually taken to comprise the outstanding volume of Treasury bills and Ways and Means Advances, the latter amounting to about 6 per cent. of the floating debt in March 1956. Of the Treasury bills outstanding, roughly two-thirds at the present time are tender bills sold on the open market, and the remainder are tap bills held by various government agencies.[1] Ways and Means Advances are nowadays made almost wholly by government departments possessing funds available for temporary investment ; advances by the Bank of England are a very small element in the total.[2]

The composition of the *other unfunded debt* (excluding debt payable in foreign currencies) is shown in Table II. The bulk of it, of course, takes the form of securities quoted on the stock exchanges. The maturity-structure of these securities is a somewhat nebulous concept,

TABLE II

OTHER UNFUNDED DEBT, 1956

		£ mn.	%
1. *Securities quoted on the Stock Exchange*		11,203	69·4
2. " *Small savings* " :			
(*a*) National Savings Certificates	1,833		
(*b*) Defence Bonds	777		
		2,610	16·2
3. *Terminable annuities*		1,174	7·2
4. *Tax Reserve Certificates*		342	2·1
5. *2½% Treasury Stock, 1986-2016*		78	0·5
6. *Other debt raised under the National Loans Act, 1939 :*			
(*a*) International Monetary Fund: Interest-free notes	375		
(*b*) International Bank for Reconstruction and Development	73		
(*c*) Bank of England: Treasury Special Account interest-free notes	3		
(*d*) European Payments Union: debit balance	74		
(*e*) Debts to other governments:			
(i) India	127		
(ii) Pakistan	6		
(iii) Portugal	77		
(iv) Other debt*	14	748	4·6
TOTAL		16,155	100·0

*Ulster Savings Certificates; Government of Jamaica: 3 per cent. Victory Loan; Cyprus Bonds; Palestine Savings Certificates and Defence Bonds; other loans free of interest from Colonial and other governments.

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[1] Especially the Issue Department of the Bank of England and the Exchange Equalisation Account.

[2] Between 1940 and 1951, of course, Treasury Deposits by banks constituted a very important part of the floating debt, rising to a maximum of £2,225 million in September 1945 ; in that year Treasury Deposits represented almost one-third of the entire floating debt.

since any given security can be classed as long-term at one time and as short-term at another which is closer to its date of repayment ; further, the great majority of these securities carry a promise of repayment over a range of years rather than in one specified year. Assuming that all securities are repaid at the latest possible date, however, the time-structure of this part of the debt in March 1956 could be classified as follows :—

	Per cent.
Repayable within 5 years	35.0
,, ,, 10 ,,	20.8
,, ,, 15 ,,	26.2
,, ,, 20 ,,	9.5
,, after 20 ,, or more	8.5

Of the final group—the very long-term unfunded debt—one security[1] carries a promise of repayment in the twenty-first century.

Next in importance come the " small savings " securities which are not quoted on the stock exchanges—i.e. are not marketable ; these are *National Savings Certificates* and no less than ten different series of *Defence Bonds* carrying interest rates of 2½ to 4 per cent. A further 7 per cent. of this " other unfunded " debt takes the form of *life annuities* and three issues of *terminable annuities* issued to the Savings Banks. The largest of the latter is the 3 per cent. annuity issued in eleven separate *tranches* between 1943 and 1949 to the National Debt Commissioners and held by them on behalf of the Post Office and Trustee Savings Banks. The annuities issued in the first four *tranches* had a term of 27 years ; those issued in the next four *tranches* had a term of 31 years ; the last three *tranches* were of 30-year annuities. The total capital liability outstanding in respect of these annuities in March 1956 was £933·6 million. The second largest issue is that of 2½ per cent. terminable annuities, the outstanding capital of which amounted to £187·5 million in March 1956. A total of £250 million of these were issued in May 1946, again to the National Debt Commissioners on behalf of the Savings Banks, and had a term of 30 years. Finally, there was a capital liability of £43·2 million outstanding in March 1956 in respect of 3½ per cent. terminable annuities, of which £50 million were issued in March 1950 for a term of 30 years and taken up by the National Debt Commissioners on behalf of the Trustee Savings Banks. The life annuities outstanding amounted to only £11 million in 1956. Under the Government Annuities Act of 1929 the National Debt Commissioners were authorised to issue life annuities, either directly or through the Savings Banks, for cash or in exchange for government stock, and in accordance with life tables approved from time to time by the Treasury. They have not proved a very attractive proposition to the general public ; only £3 million have been issued since 1929, and none at all since 1941.

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[1] 3½ per cent. Funding Stock (1999-2004), colloquially known on the Stock Exchange as " Eternity Three-and-a-halves ". An additional issue of £300 million of this security was made in February 1957.

The outstanding issue of *Tax Reserve Certificates* amounted to some £340 million in March 1956. These non-marketable securities (together with the interest accrued on them) may be tendered in payment of income or profits tax[1] to which the holder becomes liable at any time from two months after the date of the certificate's issue.[2] They were first issued at the end of 1941, and have been continuously " on tap " ever since, although the terms of issue (and especially the rate of interest payable) have been varied from time to time. The current rate of interest payable on them is 3 per cent., although the Treasury has the power to vary the interest payable on new issues by means of a notification in the *London Gazette* ; interest on the certificates is exempt from tax. The £78 million of 2½ *per cent. Treasury Stock*, 1986–2016, is another liability wholly incurred to the National Debt Commissioners. In 1943 the royalties payable in respect of operations in British coal mines were acquired by the Coal Commissioners, the compensation of the previous owners being financed by the issue of £69 million 3 per cent. Coal Commission Stock. With the nationalisation of coal in 1947, these royalty rights were transferred to the National Coal Board, and the Coal Commission Stock (then valued at £79 million), which was held wholly by the National Debt Commissioners, was replaced by the 2½ per cent. Treasury Stock at an issue price of 100½.

The final category in this section of the unfunded debt is a heterogeneous collection of liabilities incurred under the National Loans Act of 1939. Of the total of some £750 million, about £450 million represents the special *interest-free notes* issued to the International Monetary Fund and International Bank for Reconstruction and Development when the capital of these organisations was raised. These securities constitute the means wherewith the institutions concerned can obtain sterling funds from the United Kingdom as and when occasion arises and would therefore be more logically classified as contingent, rather than direct, liabilities. The interest-free notes issued to the Bank of England against the Treasury Special Account are the last remnants of the tortuous system of accounting by which the aid granted to the United Kingdom by the United States under the European Recovery Programme and Mutual Defence Assistance Programme has been recorded. Since one of the " approved uses " specified in the aid agreements for the counterpart funds corresponding to these dollar grants was the reduction of the national debt, the authorities have solemnly gone through the motions of creating special interest-free securities (which the Bank of England holds) and subsequently cancelling them with the sterling funds accruing from the allocation of dollars to importers.

The debt to the *European Payments Union* represents that part of the United Kingdom's cumulative deficit with the rest of the E.P.U. area which had been covered by using the credit facilities of the Union.[1] The interest payable on this borrowing varies according to the period of time for which the debt has been outstanding,[2] but the average lies between 2½ and 3 per cent. The debts to the governments of *India and Pakistan* are the capital liabilities for the pensions of British civil servants assumed by the United Kingdom under the various pensions annuities schemes and finally determined by the Pensions (India, Pakistan and Burma) Act of 1955. The Portuguese debt of some £76·6 million represents the outstanding balance of the loan of £62 million by which the sterling balances accumulated by Portugal during the war (largely through the sale of wolfram) were funded in 1945 ; this debt was written up by some £25 million in 1949 as a result of the devaluation of the pound.

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[1] Except tax assessed under Schedules C and E.

[2] No interest is paid on certificates whose repayment is demanded in cash.

Finally, sterling debt incurred under the National Loans Act includes a variety of relatively small loans raised in Northern Ireland and Commonwealth countries—especially through the issue of savings certificates—mainly during the war. Two items are of some special interest ; these are the sterling debts to the United States incurred under agreements of July 1951 and June 1953 and together totalling some £6 million in March 1956. Under these agreements the United States lent to the United Kingdom the equivalent of sums which were lent in sterling by the United Kingdom to Rhodesia and East Africa. The latter loan represented 50 per cent. of the cost of port developments in Mombasa and Tonga, carrying a rate of interest of 5 per cent. and repayable by 1978. The former was earmarked for investment in Rhodesian railways, it being hoped that the production of certain raw materials would be assisted thereby. This loan carries a rate of interest of 2½ per cent., and is repayable by the beginning of 1965—repayment to be effected as far as possible by deliveries of primary products to the United States.

The fourth and last section of the debt—that repayable in *external currencies*—is in some ways of most interest ; its present composition is shown in Table III. For all practical purposes, of course, the British external debt means the debts to the United States and Canada, which in 1956 accounted for 97 per cent. of the total. A small part of this transatlantic indebtedness consists of the interest-free loan made by Canada during the war ; a somewhat larger share is taken by the loan (as opposed to the grant) elements in the dollar allocations to the United Kingdom under the European Recovery Programme and Mutual Defence Assistance Programme. By far the greatest part of Britain's indebtedness to the United States and Canada, however, arises from the reconstruction loans of 1945-6 ; in 1956 these together amounted to around £1,850 million. The annual service charge on these American

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[1] As will be seen below, a part of the United Kingdom's E.P.U. deficit was transferred to the category of external debt under the funding agreements of 1954.

[2] See *Directives for the application of the agreement for the establishment of a European Payments Union*, O.E.E.C., Paris, 1954, para. 39, sub-para. (c).

TABLE III—UNITED KINGDOM DEBT PAYABLE IN EXTERNAL CURRENCIES
(AMOUNT OUTSTANDING AT MARCH 31ST.)
£ MILLION.

Creditor country	1948	1949	1950	1951	1952	1953	1954	1955	1956
1. *United States**									
(*a*) Reconstruction Finance Corporation Loan, 1941	42	33	31	12	—	—	—	—	—
(*b*) Government Loan, 1945	1,090	1,082	1,556	1,555	1,536	1,517	1,498	1,478	1,458
(*c*) E.C.A. Loans, 1948-9	—	68	115	120	120	120	120	120	120
(*d*) M.S.A. Loan, 1952	—	—	—	—	—	17	17	17	17
TOTAL	1,132	1,183	1,702	1,687	1,656	1,654	1,635	1,615	1,595
2. *Canada**									
(*a*) Interest-free loan, 1942	74	68	95	86	79	71	52	41	29
(*b*) Government loan, 1946	250	257	375	403	422	419	414	411	397
TOTAL	324	325	470	489	501	490	466	452	426
3. *European Payments Union†*	—	—	—	—	—	—	—	59	50
4. *Other‡*	99	87	18	16	11	19	14	4	4
TOTAL	1,555	1,595	2,190	2,192	2,168	2,163	2,115	2,130	2,075

* The debts to the United States, Canada and Belgium (the latter included in "Other") were written up in sterling terms as a consequence of the devaluation of September 1949. From 1950 onwards the sterling value of the Canadian debt is also written up or down in accordance with fluctuations in the exchange rate of the Canadian dollar.

† Part of the United Kingdom debit balance in E.P.U. became subject to repayment in gold or dollars as a result of the E.P.U. funding agreements of 1954, and was therefore re-classified as external debt.

‡ Belgium, Ceylon, East Africa, Fiji, Iraq, Japan, Mauritius, Newfoundland, Singapore, South Africa, Straits Settlements and Trinidad.

and Canadian debts has amounted to some $180 million in recent years of which about $110 million represents interest charges and the remainder capital repayment.[1]

The European Payments Union debt arises out of the agreements arrived at in 1954 concerning repayment of long-standing E.P.U. deficits and credits. The United Kingdom debt is mainly to the Federal Republic of Germany, Belgium and the Netherlands, and its service adds approximately $40 million to the annual outflow of dollars at the present time.[2] The only other United Kingdom debts payable in external currencies outstanding in 1956 consisted of some £2·7 million borrowed during the second World War from the governments of

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[1] It should be noted that service charges on the M.S.A. loan commenced to be payable only from mid-1956.

[2] *The Economist*, 10th July, 1954, pp. 136-9. No payments are currently made on the debts owing to Germany ; the due amounts are offset against the service charges on Germany's post-war debts to the United Kingdom.

Ceylon and Trinidad, payable in Ceylon rupees and British West Indies dollars respectively.

Taken as a whole, then, the external debt of the United Kingdom is clearly a factor of considerable significance in the British balance of payments. Waivers apart, the current burden imposed by it on the dollar accounts of the United Kingdom is something of the order of $250 million, and although the total value of the external currency debt in 1956 was some £120 million smaller than at its post-war peak in 1951, it is obvious that it will remain a major item in the dollar balance of payments for many years. All this, of course, refers only to that part of the debt which is payable in foreign currencies. To make full allowance for the balance of payments significance of the national debt, due account must be taken of external holdings of the internal debt ; an attempt to do this is made in sections III and IV below.

III. The Ownership of the Debt

As was remarked earlier, no official data are published on the ownership of the British national debt. The significance of changes in the absolute total of the debt and its annual charge, or their relationship to national income, is very difficult to evaluate in the absence of knowledge of the distribution of the debt amongst various classes of holders. At odd times in the past a few estimates have been made of the ownership of the British national debt, although none of them had any great pretensions to rigorous analysis. Three such sets of estimates, for the years 1924, 1934 and 1949, are shown in Table IV ; in order to achieve some degree of comparability a good deal of re-classification

Table IV—Estimates of the Distribution of the National Debt

	Layton 1924 (Total Debt)		*The Economist* (Marketable debt)			
			1934		1949	
Holders	£ mn.	%	£ mn.	%	£ mn.	%
Government departments	420	6·4	860	16·5	2,650	21·7
Banking system*	1,190	18·0	800	15·3	3,000	24·5
Insurance companies	400	6·1	350	6·7	950	7·7
Post Office and Trustee Savings Banks, etc.†	510	7·7	900	16·9	4,000	32·7
Joint-stock companies‡	1,730	26·2	340	6·5	440	3·6
Other private holdings	2,350	35·6	2,000	38·1	1,200	9·8
Total	6,600	100·0	5,250	100·0	12,240	100·0

* Includes discount houses, brokers, etc.
† Includes friendly societies, private and public trustees.
‡ Includes building societies and railways.

of these estimates (sometimes of a rather arbitrary nature) was necessary.[1]

The estimates for 1924 were presented by Lord Layton to the Colwyn Committeee ;[2] they relate to the whole debt—i.e. including floating and other non-marketable debt. Those for 1934 and 1949, by contrast, relate only to the marketable debt—i.e. to quoted government securities —and are therefore comparable with the 1924 estimates only to a very limited extent ; they were published by *The Economist*.[3] The differences in classification between these three sets of estimates—and even between the two sets published by *The Economist*—seriously qualify their usefulness. The most that can be concluded from them with any confidence is that the concentration of the debt in the hands of various official and financial agencies (as opposed to private persons and institutions) was proceeding apace in the 1920s, 30s and 40s. The data summarised in Table IV would suggest that joint stock companies (i.e. other than financial and savings institutions) and " other private holdings " accounted for about 62 per cent. of the debt in 1924, 45 per cent. in 1934 and only 13 per cent. in 1949. The inconsistency between these estimates almost certainly results in an exaggeration of the pace of this movement, but it seems clear that a substantial redistribution of this kind was occurring.

In view of the limited usefulness of these earlier estimates, it seems likely that some good purpose would be served by the presentation of estimates for a recent series of years in more detail (both as regards methods of estimation and final product) than has been given with any of the estimates referred to in the preceding paragraph. These are finally brought together in Table V (p. 223). Further, the present estimates seek to maintain consistency of definition with the national income statistics as currently published, and from which some useful information can be gleaned concerning the distribution of interest payments on the debt.

For the purposes of both the estimates of the holdings of the national debt itself and of those of the distribution of interest payments on it, the economy has been divided into seven sectors :

(i) Central government agencies ;
(ii) The Post Office and Trustee Savings Banks ;
(iii) Persons and institutions engaged in insurance, banking and finance ;
(iv) Companies other than those included under (iii) ;

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[1] Attention should also be drawn to a most workmanlike set of estimates for 1953 contained in Macrae, *The London Capital Market*, Staples Press, London, 1955, especially Chapter VII. Although these present a fair degree of detail, the estimating methods and assumptions underlying many of the items were described in only very general terms—a procedure almost inevitable in a work whose scope extended far beyond the national debt alone. Other expert and fairly detailed estimates of the distribution of the debt on different occasions have been published in the pages of the *Midland Bank Review*—see " The size and shape of the National Debt ", February 1950, pp. 1-6, and " The National Debt examined ", August 1953, pp. 1-7.

[2] See *Report of the Committee on National Debt and Taxation*, Cmd. 2800, H.M.S.O., London, 1927, Section IV, pp. 98-9, para. 263.

[3] 9th February, 1935, pp. 318-9 ; 8th April, 1950, pp. 784-6.

(v) Persons and non-profit-making institutions resident in the United Kingdom ;
(vi) All persons and institutions non-resident in the United Kingdom ; and
(vii) The residual group " other ", representing unidentified and unclassified holders.

A somewhat more detailed definition of most of these sectors is given below. Two general features of the estimating procedure may perhaps be noted at this stage, since they each apply to most of the different sectors :

(*a*) *Valuation*

Where recourse was had to balance-sheet or comparable data, the declared values of securities were taken without any attempt to allow for under- or over-valuation. The justification for this is simply the absence of any information (except for some official holdings and those of some clearing banks in recent years) concerning the differences between the market value of securities, their nominal value and their valuation for balance-sheet purposes.

(*b*) *Government-guaranteed Securities*

Since this is a study of the national debt, it was necessary to exclude holdings of (or interest on) securities carrying a government guarantee but not forming part of the national debt. Except in a minority of cases, however, such securities are included in published balance sheets as "government securities" along with holdings of the national debt properly so called, so that an arbitrary allowance has to be made for them.

Since government securities and government-guaranteed securities are obviously very close substitutes, it has been assumed throughout that unless the actual holdings in each group are shown separately, an institution's " government securities " are divided between guaranteed securities and national debt securities in the same proportions as those of the total nominal values outstanding of each type of security respectively.[1] This probably results in some under-estimation of the holdings of government securities, at least by the London Clearing banks ; the deduction from the total shown for " investments " in their returns was generally of the order of 15 per cent., whereas it has been stated that the banks " ordinarily include unspecified *but probably small* amounts of government-guaranteed securities along with direct government obligations."[2]

The methods of estimating the value of government securities held by each sector will now be described briefly.

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[1] A somewhat different course of procedure is therefore deduced from the same basic assumption (of close substitution) in comparison with J. R. Sargent, " A ' Rent, dividends and interest ' account for 1948," *Bulletin of the Oxford University Institute of Statistics*, Vol. 14, No. 1, January 1952.

[2] *Midland Bank Review*, August 1952, p. 5. (Italics added).

1. GOVERNMENT AGENCIES AND SAVINGS BANKS

Government agencies were taken to comprise the Issue and Banking Departments of the Bank of England,[1] the Exchange Equalisation Account and the funds of all other government departments (other than those held by the National Debt Commissioners on behalf of the Post Office and Trustee Savings Banks).[2] The average holdings of the two departments of the Bank of England were taken as the sum of government securities shown in the published returns. Some of the securities held by the Banking Department under the heading " Discounts and advances " should also be included—i.e. Treasury bills re-discounted for money-market houses ; since no data are available concerning the division of the Bank's bills between Treasury bills and others, however, no attempt has been made to allow for holdings under this heading.[3]

The Exchange Equalisation Account presents more formidable difficulties. Nothing is known about its sterling assets except (*a*) those with which it was equipped when it commenced business in 1932, and (*b*) the issues of bills to it from the Exchequer—or repayments by it to the Exchequer—which are shown in the *Finance Accounts* for the years in which the transactions occur.[4] In order to obtain some rough estimate of the Account's holdings of sterling assets,[5] therefore, the following procedure was adopted. An earlier estimate of the Account's bill holdings in March 1938 was taken as the starting point.[6] To this was added each year an amount equal to the net sales of gold by the Account during that year (purchases being treated as negative sales, of course)[1] and any new issues to the Account by the Exchequer (or repayments to the Exchequer) shown in the *Finance Accounts* of the year concerned.

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[1] The national income statisticians treat the Issue Department of the Bank as part of the central government, but the Banking Department is treated by them as a Public Corporation (see *Sources and Methods*, ch. VII and VIII, pp. 169 and 180). It is not too difficult to see the logic behind this sundering apart of the unfortunate Bank, but it seems to be a rather unhappy and unduly artificial procedure nevertheless. It is not followed here.

[2] In *National Income and Expenditure* 1956 (H.M.S.O., London, 1956)—subsequently referred to as the *Blue Book*—these Savings Banks funds are treated as part of the Central Government (*Sources and Methods*, ch. VIII, p. 181), a procedure followed in some earlier estimates by one of the present writers (Nevin, *ibid.*, ch. II-III). Whereas the national income statisticians have the consolation of showing an outflow from the Savings Banks (now treated as Trading Departments) to their depositors in the form of interest payments (*Sources and Methods*, ch. VIII, p. 198), this would not be shown in a study of the national debt *simpliciter*. It seems best, therefore, to treat the Savings Banks as a separate sector in the present study ; they present features of both a government agency and (indirect) holdings of the debt by private persons. (The reader can thus add them back into the total for government agencies if such seems a preferable classification). If the Savings Banks securities are treated as straightforward official holdings, then the deposits of the general public in the Savings Banks should in strict logic be added to the national debt itself. This would be a perfectly defensible procedure, but it would turn the study into one of the national debt as it might (or should) be, rather than one of the debt as it now is.

[3] The amount involved, of course, is relatively small. In 1955, the Bank's discounts and advances averaged £22 million, compared with an average holding of government securities in the two departments amounting to £2,074 million.

[4] The figure shown annually against the Exchange Account in the " Estimated Assets " shown in the *Finance Accounts* is obviously a purely nominal one, and bears no discernible relation to the true total of assets held by the Account.

[5] Generally assumed to be held in the form of Treasury bills, except for a very small working balance held on deposit at the Bank of England.

[6] D. S. Lees, " Public departments and Cheap Money, 1932-38," *Economica*, (N.S.), Vol. XXII, No. 85, February 1955, Appendix, p. 79.

A further allowance has then to be made for the Account's holdings of dollar securities, about which very little is known.[2] Two known facts are that at the end of 1956 the Account held dollar securities worth $750—$1,000 million, and—from the American source—that the securities deposited by the Account with the Reconstruction Finance Corporation were valued at $360 million in 1945.[3] It is believed that the bulk of these securities were purchased rather than borrowed by the Account and have been retained since. On only two occasions have sales occurred—during 1945-52 to achieve repayment of the R.F.C. loan, and 1955, when some dollar securities were sold on the open market. It seems unlikely that sales during the first period were substantial,[4] while it is known that in 1955 the sales by the Account amounted to no more than $30 million.[5] On the other hand, the rise in the value of the Account's dollar securities from $360 million in 1945 to, say, $1,000 million in 1956 could easily be accounted for by the rise in values on the New York Stock Exchange.[6] In estimating the Account's sterling assets, therefore, it has been assumed that they fell by £50 million in 1941,[7] and rose by £10 million in 1955 as the result of purchases and sales by the Account of U.S. securities.

Given the accuracy of the estimate for 1938, the resulting estimates of sterling assets in later years can still be only approximations, since the calculation ignores altogether (*a*) the net jobbing profits or losses involved in the Account's operations, (*b*) the income received by the Account from its holdings of U.S. securities, and (*c*) the monthly settlements since 1939 between the Account and the Issue Department with regard to changes in the value of gold and other assets held by the latter.[1] These items are almost certainly small in relation to the Account's total assets, but it is possible that the enforced ignoring of them introduces a cumulative error of some magnitude into the calculations.

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[1] For the years 1938-45 gold sales were calculated from *Reserves and Liabilities*, 1931 to 1945, Cmd. 8354, H.M.S.O., London, 1951, Tables I and II. For subsequent years data were taken from the *Annual Abstract of Statistics*, No. 93, 1956, H.M.S.O., London, 1956, Table 273.

[2] An unspecified volume of dollar assets was acquired from U.K. residents and deposited by the Account as collateral security against a loan from the Reconstruction Finance Corporation in 1941. These assets comprised (*a*) direct investments in the U.S. by British companies, (*b*) U.S. securities borrowed by the Account from British owners, and (*c*) U.S. securities purchased by the Account from British holders.

[3] See *The Economist*, 7th July, 1951, p. 46, and 8th December, 1956, p. 901.

[4] The R.F.C. loan was repaid by means of the income on the Account's dollar assets as well as by sales. During 1945-9 the amounts paid off the debt were £8-£10 million each year, or roughly 10 per cent. of the 1945 value of its U.S. securities, which is not an unlikely approximation to the earnings of these assets. Except for 1950-51, the repayments in 1949-52 were of a similar magnitude (the sterling equivalent was some 40 per cent. greater, of course, but this would be due almost wholly to the 1949 devaluation), but it seems likely that repayment equivalent to some £5 million was effected in 1950-51 by means of sales.

[5] *The Economist*, 8th December, 1956, p. 901.

[6] The bulk of these securities were industrials, and Standard and Poor's index for general U.S. industrials (old and new series linked in 1952) rose from 123 in 1945 to 397 in 1956.

[7] The same index suggests that industrial securities worth £90 million in 1945 would have cost about £65 million in 1941. It has been assumed that of this total securities worth £15 million were borrowed and securities worth £50 million were purchased by the Account.

The holdings of other departmental funds at March 31st each year are nowadays disclosed in the annual return *National Debt*.[2] The exact coverage of the expression " departmental funds " does not appear to have been rigorously defined recently,[3] but the return *National Debt* specifically indicates that the holdings of the Charity Commissioners and the Public Trustee are not included in the total holdings shown for government departments. This omission is fairly easily repaired, however, by reference to the annual reports of these bodies.[4] The holdings of the Savings Banks, as shown in their annual accounts[5] have been subtracted from this total and are shown separately. In order to secure comparability with the estimated distribution of interest payments, discussed in the following section, it was necessary to obtain an average for each year. Such averages are published for the Bank of England, but for the remaining funds it was thought sufficient to take the arithmetic mean of the holding at the end of the financial year falling in the calendar year concerned and that at the end of the following financial year.[6]

2. Banking, Insurance and Finance

(*a*) *London Clearing Banks*

For the years 1948–50, the estimates of holdings of Treasury bills and government securities were those of Professor Johnson,[7] an adjustment for government-guaranteed securities along the lines indicated above being made to these estimates. For later years the series was extended by using similar methods of estimation, although after 1951 the division by the banks themselves of their bill portfolios into Treasury bills and other bills renders it unnecessary to make an estimate of Treasury bill holdings. The holdings of Treasury Deposit Receipts were taken from the published returns.

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[1] Currency and Bank Notes Act, 1939, sec. 3.

[2] Holdings of 4 per cent. Funding Loan and 4 per cent. Victory Bonds by the Death Duties (Surrendered Securities) Account are shown separately and have been added to the departmental holdings shown in a footnote to the " Capital Account " of the annual return *National Debt*. For the years 1948-50 this footnote indicating departmental holdings was not published, but comparable data were given each year in the form of an answer to a Parliamentary question. (See 458 H.C. DEB. 5S (1948-9) *22*, 469 H.C. DEB. 5S (1949-50) *141* and 480 H.C. DEB. 5S (1950-51) *174*.

[3] But see *The Economist*, 8th April, 1950, pp. 734-5. It is known that the National Debt Office administered some 60 accounts in 1935 (Lees, *op. cit.*, p. 72, fn.1), but in its recent inquisition of the National Debt Office, the Public Accounts Committee does not appear to have enquired as to the number of customers currently dealing with that Office, (see *First, Second and Third Reports from the Committee of Public Accounts*, 1951-52, H.M.S.O., London, 1952).

[4] *Annual Report of the Charity Commissioners for England and Wales* ; *General Report of the Public Trustee.*

[5] The estimated holdings at March 31st of each year as published in *British Government Securities* have been used, since the accounts of the Savings Banks themselves relate to years ending in November 20th and December 31st.

[6] A weighting procedure might have been adopted to allow for the uneven distribution of financial year-ends about the calendar year, but this seemed to indicate pretensions to a degree of accuracy which the data simply do not justify.

[7] H. G. Johnson, " Clearing bank holdings of public debt," *London and Cambridge Economic Service Bulletin*, Vol. 29, No. 4, November 1951, pp. 102-9.

(*b*) *Other Banks*[1]

Total investments were taken from balance sheets. This total was divided between gilt-edged and other securities by applying to it the same ratio as that disclosed in the balance sheets which showed government and other securities separately. The estimates are averages of end-year figures.

(*c*) *London Discount Houses*[2]

Estimates were made from balance sheets in the same manner as that described for the banks at (*b*) above.

(*d*) *Insurance Companies*

The total holdings of government securities by assurance companies established within Great Britain are published in the *Annual Abstract of Statistics*.[3] This value was taken and adjusted downwards to allow for holdings of government-guaranteed securities.

(*e*) *Building Societies*

A " benchmark " estimate of £140 million for gilt-edged holdings by British building societies in 1950 was adopted from *The Economist*.[4] Estimates for other years were obtained by applying to this figure an index of the total investments of British building societies calculated from returns published in the *Annual Abstract of Statistics*.[5]

No allowance was made for holdings of the national debt by British investment trusts, since such holdings have been authoritatively described as " infinitesimal ".[6]

3. PUBLIC JOINT-STOCK COMPANIES

The gilt-edged holdings shown in the analyses of industrial balance sheets published each quarter in *The Economist* were first aggregated.[7]

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[1] *Scottish banks* :—Bank of Scotland ; British Linen Bank ; Clydesdale and North of Scotland Bank; Commercial Bank of Scotland; National Bank of Scotland; Royal Bank of Scotland ; Union Bank of Scotland ; *Irish Banks* :—Belfast Banking Co. ; Northern Bank ; Ulster Bank ; *Other Banks* :—Barings, Blydenstein ; Erlangers ; Grindlays ; Hambros ; Hoare ; Isle of Man Bank ; Japhet ; Yorkshire Penny Bank ; C.W.S. and S.C.W.S. Banks.

[2] Alexanders ; Allen ; Harvey and Ross ; Cater, Brightwen & Co. ; Gillett Brothers ; Jessel Toynbee ; King and Shaxson ; National Discount ; Smith St. Aubyn ; Union Discount.

[3] E.g. No. 93, 1956, Table 326.

[4] 8th April, 1950, p. 785. See also Macrae, *op. cit.*, Ch. VII, p. 84.

[5] See, e.g. No. 93, 1956, Table 333.

[6] *The Economist*, 15th August, 1953, p. 467.

[7] In order to make rough allowance for the lag which occurs in the drawing-up and publication of balance sheets, the balance sheets used for any calendar year comprised those published between April and December of that year and during the first quarter of the succeeding year.

This total was then grossed-up in the same ratio as that which the issued capital of the companies included in the sample bore to the total paid-up capital of all public companies registered in the United Kingdom. The usual adjustment was made for holdings of government-guaranteed securities. No attempt was made to allow for gilt-edged holdings by private companies, but it does not seem likely that these will be very significant.[1]

4. Friendly Societies, Collecting Societies, Industrial and Provident societies and Trade Unions

Data concerning the total assets of these institutions were taken from the annual reports of the Registrar of Friendly Societies and the Industrial Assurance Commissioner. Where holdings of government securities were not distinguished from other securities, total securities were divided as between government and other in the same proportion as that in other similar funds, or (in the case of Trade Union funds) that published for an earlier year.

5. Persons

The total value of property in the ownership of private persons possessing an estate of £2,000 or more was calculated by applying the appropriate mortality rate to the estates passing for duty in each sex and age-group, as published in the annual Inland Revenue reports.[2] The value of private holdings of government securities was estimated by applying to this total the ratio of gilt-edged holdings to total estate values (also published annually in the Inland Revenue reports). It should be emphasised that the resulting estimate makes no allowance for holdings of government debt by persons whose total property is valued at less than £2,000. This is a regrettable fact, since the holdings of such people, while probably quite small individually, probably amount to a considerable value in the aggregate.[3] Nevertheless there is at present a complete lack of information bearing on this point which might permit even a reasonable guess to be made.

6. External Holdings

(a) *Debt Payable in External Currencies*

As has been noted in section II, the vast bulk of this part of this debt is due to foreign governments. Although it is conceivable that some of it may be held by persons or institutions resident in the United Kingdom, therefore, it is most unlikely that more than a very insignificant fraction of the total would be held domestically in this way. The external holdings of this part of the debt were therefore taken to be equal to the nominal amount outstanding each year.

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[1] But see section IV below.

[2] For a full discussion of this method of estimation, and of its limitations, see K. M. Langley, "The distribution of Private Capital, 1950-51," *Bulletin of the Oxford University Institute of Statistics*, Vol. 16, No. 1, January 1954, pp. 1-13.

[3] However, it should be remembered that the debt held by this group indirectly *via* the Savings Banks and other small savings institutions—possibly a very substantial fraction of the whole—is allowed for in the estimates for the institutions concerned.

(*b*) *Sterling Debt*

More obscurity necessarily surrounds the holdings by non-residents of that part of the debt on which interest and capital payments are made in sterling. No official data are published which would throw light on this.[1] However, the authorities publish figures for the total sterling liabilities of the United Kingdom to all other countries, and this has been taken as a fairly close approximation to non-resident holdings of sterling debt. The total published by the Treasury[2] includes :—

(i) Net sterling liabilities of United Kingdom banks (including discount and acceptance houses) to non-residents, including any British government securities held for account of overseas banks ;

(ii) Funds held by the United States government, representing the counterpart of dollar aid ;

(iii) Funds held by Currency Boards and with Crown Agents for overseas governments ;

(iv) Overseas loans to the United Kingdom expressed in terms of sterling ; and

(v) United Kingdom sterling securities held by official bodies (so far as is known).

It is clear, therefore, that the published total of the United Kingdom's sterling liabilities will include bank deposits held by non-residents,[3] as well as securities ; on the other hand, it will exclude British government securities held by non-resident persons and private institutions, as opposed to banks or official agencies. Nothing is known about the relative magnitudes of these items, but they will clearly cancel out to some extent if it is assumed that the total for United Kingdom sterling liabilities is equal to non-resident holdings of internal debt. Intuitively, one would imagine that the latter item (private non-resident holdings of the debt) would exceed the former (bank deposits held by non-residents). If this is so, the sum shown for external debt holdings in Table V will be an under-estimate to that extent, but a bias in the opposite direction is certainly possible as a result of this arbitrary assumption.

7. OTHER HOLDINGS

This, of course, is the residual item. It includes the holdings of local government authorities, persons whose estates do not amount to £2,000, private United Kingdom companies, private pension funds and other

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[1] Except the nominal amount outstanding of debt raised abroad (under the National Loans Acts) but not payable in foreign currencies—see section II.

[2] See, for example, *Annual Abstract of Statistics*, No. 93, 1956, Table 272.

[3] And money lent at call in the London money market. For 1953, Macrae suggests that the amount of foreign sterling involved in such loans might have been as much as £200 million, roughly as much as the estimated value of foreign-held deposits in British banks. (See Macrae, *op. cit.*, ch. VII, p. 80).

TABLE V

OWNERSHIP OF THE NATIONAL DEBT

£ MILLION

Holders	1948	1949	1950	1951	1952	1953	1954	1955
1. *Government agencies:*								
(*a*) Bank of England	1,653	1,668	1,846	1,720	1,787	1.908	1,986	2,074
(*b*) Exchange Equalisation Account	458	485	456	707	741	415	475	708
(*c*) National Insurance Funds	861*	964	1,070	1,119	1,086	1,147	1,182†	1,185†
(*d*) Public Trustee and Charity Commissioners	232‡	235	235	235	238	240	242	244
(*e*) Other ..	475	464	550	285	197	105	139	144
TOTAL ..	3,679	3,816	4,157	4,066	4,049	3.815	4,024	4,355
2. *Post Office and Trustee Savings Banks* ..	2,453	2,499	2,388	2,514	2,452	2.390	2,318	2.313
3. *Insurance, banking and finance:* ..								
(*a*) London Clearing Banks	3,261	3.381	3.393	2,797	2.769	2,857	2,927	2.679
(*b*) Scottish Banks	424	427	426	428	426	442	469	444
(*c*) Irish Banks ..	62	62	62	59	55	59	63	61
(*d*) Other U.K. Banks	286	259	240	204	194	199	206	210
(*e*) London discount houses ..	740	837	904	775	830	793	873	817
(*f*) Insurance companies ..	998	1.002	982	953	956	1,004	1.033	1,234
(*g*) Building societies	155	140	144	139	151	176	213	231
TOTAL	5,926	6.108	6.151	5.355	5.381	5.530	5.784	5,676
4. *Public joint-stock companies* ..	218	155	176	180	209	206	214	203
5. *Friendly etc. societies*	254	254	260	264	285	304	351	381
6. *Persons*	3.774	4,082	4,133	3,968	3.663	3,904	3,984	4,102
7. *External holdings:*								
(*a*) Foreign currency debt	1,555	1,595	2,190	2,192	2,168	2,163	2.115	2,130
(*b*) Sterling debt ..	3,420	3,417	3,745	3,809	3,433	3,703	3,902	3,742
TOTAL ..	4,975	5,012	5,935	6,001	5,601	5,866	6 017	5,872
8. *Other holdings* ..	4,216	3,658	2.759	3,653	4 423	4.392	4.154	4,169
TOTAL ..	25,495	25,584	25,959	26,001	26,063	26,407	26,846	27,071

* Until July 1948 these were known as the National Health and Unemployment Insurance Funds.

† Since published data for 1955 and 1956 were not available at the time of making these estimates, the figures for 1954 and 1955 were derived by using the total assets of the funds as at 31st March as an index-number.

‡ Holdings by the Public Trustee have not been published, and an estimate of £130 million has therefore been included for this year. The only figure published for 1948 by the Charity Commissioners is that relating to holdings as at December 31st, and this figure has been used.

institutions not elsewhere specified. In addition, it will include all errors of estimation.

In order to assist the reader to obtain a general impression of what is a distinctly forbidding piece of tabular material, the estimated percentage distribution of the national debt has been summarised in Table VI. It will be seen that in recent years the government and institutions of the financial system (including the Savings Banks) have held something of the order of 45 per cent. of the total debt ; a further 20 per cent. or so has been held by non-residents, so that only about a third of the debt has been in the hands of the broad mass of persons and enterprises within the United Kingdom itself. The aim of this article is to build up a picture of the actual position regarding the debt, rather than to interpret the facts ; hence the implications of this high degree of concentration in the ownership of the internally-held national debt will not be investigated. These implications, however, are both numerous and important.

TABLE VI

OWNERSHIP OF THE NATIONAL DEBT

PER CENT. OF TOTAL

Calendar year	Government agencies	Post Office and Trustee Savings Banks	Insurance, banking and finance	Public joint-stock companies	Persons, friendly etc. societies	External holders	Other
1948	14·4	9·6	23·2	0·9	15·8	19·5	16·6
1949	14·9	9·8	23·9	0·6	16·9	19·6	14·3
1950	16·0	9·2	23·7	0·7	16·9	22·9	10·6
1951	15·6	9·6	20·5	0·7	16·6	23·0	14·0
1952	15·5	9·4	20·6	0·8	15·2	21·5	17·0
1953	14·5	9·1	20·9	0·8	15·9	22·2	16·6
1954	15·0	8·6	21·6	0·8	16·1	22·4	15·5
1955	16·1	8·5	21·0	0·7	16·6	21·7	15·4

Part II to appear in the following number.

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Method and Analysis in David Hume's Economic Essays

By Douglas Vickers

David Hume's *Essays, Moral, Political and Literary* have long been recognised as one of the foremost contributions of the eighteenth century to English economic thought.[1] Their author has been described as a synthesist of the best of the theoretical traditions which preceded him, as the destroyer of the theoretical misconceptions which informed the earlier " mercantilist " economic policies, and as the precursor of many of the theories which grew to maturity and flowered in the ensuing English classical period. It is not the purpose of this paper to submit another detailed analysis of the *Essays*. Its objective is a more limited one. The following sections will be confined to an examination of the monetary analysis contained in the *Essays*, considered in terms of the intepretative propositions implicit in our title: firstly, Hume has here made a distinctive contribution to the methodology of economic thought, and secondly, the substantive content of the *Essays* depends explicitly on the methodological observations with which they are prefaced.[2]

On the level of economic theory with which we are here concerned, the *Essays* stand in a transitional and intermediate position in the history of thought. Their content is not always as original as might appear, or as unambiguous as might often have been imagined. Several earlier authors, Vanderlint[3] and Cantillon,[4] for example, as well as Isaac Gervaise,[5] had clearly stated the theory of the self-balancing mechanism upon which Hume's fame has so often depended. He was in no sense the first in a liberally thinking century to make an " onslaught "[6] on " mercantilist " theory and policy.[7] In the theory of money, moreover, Hume's position is transitional in an ambiguous sense. On the one hand his work, like that of other authors at much the same time, developed dynamic theorems of the money flow process[1] from the earlier static propositions of monetary theory.[2] On the other hand, the *Essays* were transitional in the sense that they established, and even emphasised, the kind of propositions with which the economics of the following century was primarily concerned. As Keynes has said, " Hume began the practice amongst economists of stressing the importance of the equilibrium position as compared with the ever-shifting transition towards it ".[3] Diverging paths, in other words, led from the point in the history of thought at which Hume stood and the question of immediate interest concerns the relation of his *Essays* to these separate and diverging lines of development. Is there a discernible priority in his work of either the equational-static or the causal-dynamic type of proposition ? What is its position, in other words, in relation to the stage of development of the theory of money at that time ? Was Hume something more, or less, than an " ardent quantity theorist " ?[4] Is one in fact " left with the impression that . . . Hume's thinking was always in terms of an instantaneous, rigid quantity theory " ?[5]

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[1] David Hume, *Essays, Moral, Political and Literary*, Part II, *Essays I to IX*—Edinburgh Ed., 1817. First published 1752.

[2] A fuller examination of the development of the theory of money in the eighteenth century, and of Hume's position in relation to it, is contained in my thesis, " Studies in the Theory of Money 1690–1776 ", accepted by the University of London in June, 1956, for the award of the Ph.D. degree.

[3] Jacob Vanderlint, *Money Answers all Things*, 1734, v. Johns Hopkins University reprint, ed. J. H. Hollander, 1914.

[4] Richard Cantillon, *Essai sur la nature du commerce en général*, written 1730-4 and published in Paris, 1755, v. Royal Economic Society edition, published London, 1931, translated by Henry Higgs.

[5] Isaac Gervaise, *The System or Theory of the Trade of the World*, 1720. For a discussion of this author's " elaborate and closely-reasoned exposition of the nature of international equilibrium and of the self-regulating mechanism " see Jacob Viner, *Studies in the Theory of International Trade*, pp. 79-83; *vide* Johns Hopkins University reprint, 1954.

[6] Cf. E. Whittaker, *History of Economic Ideas*, p. 294.

[7] On the question of economic liberalism *vide* W. D. Grampp, " The Liberal Elements in English Mercantilism ", *Quarterly Journal of Economics*, November, 1952.

II

The Monetary Process and the Value of Money

On these questions clear guidance as to Hume's theoretical intentions is found in the prologue to the *Essays*. Here he erects the notion of a body of " general principles " or " general reasonings "[6] in the same way as he states in another context that the discussion in hand is concerned " to form a general argument "[7] and to arrive at a " general theory ".[8] Consistently the *Essays* are concerned to look at " principles ", to examine " the principles by which we can reconcile *reason* to *experience* ",[9] or to discover " the *method of reasoning* on these subjects ".[10] It is not always " easy . . . to distinguish, in a great number of particulars, that common circumstance in which they all agree . . .";[1] but in this, as Hume goes on to establish, in the method of theoretical abstraction and successive approximation, lies the true approach to economic theory and the description of economic affairs. The generalised theorems which the author erects are taken to describe the relationships subsisting in the universe of enquiry and to exhibit the directions of causation involved in them. In the separate discussions contained in the *Essays* a unity of method is found in the fact that while it is not possible to specify *a priori* the outcome of a disturbance to existing relationships in the monetary system, it is possible, nevertheless, to show that in a qualitative sense the outcome is describable in terms of, and itself exhibits the nature of, the anterior general propositions.[2]

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[1] Cf. Cantillon, *op. cit.*, and Sir James Steuart's *Principles of Political Economy*, 2 vols., 1767.

[2] Cf. particularly John Locke's *Consequences of the lowering of interest and raising the value of money*, 1691, and *Further considerations concerning raising the value of money*, 1695.

[3] J. M. Keynes, *General Theory of Employment, Interest and Money*, p. 343 n. But Hume was in no sense the first to see an *analytical significance* in the " equilibrium position ". Cf. in particular the macro-dynamic concept of equilibrium in Vanderlint, *op. cit.* (*vide* my thesis as cited, Ch. IX, p. 293 ff). There is a great deal of significance in Keynes' further remark, however, that Hume " was still enough of a mercantilist not to overlook the fact that it is in the transition that we actually have our being ".

[4] E. Whittaker, *op. cit.*, p. 692.

[5] J. M. Low, " An Eighteenth Century Controversy in the Theory of Economic Progress ", *Manchester School*, September, 1952, p. 317.

[6] *Essays* . . ., p. 250.

[7] *Ibid.*, p. 309.

[8] *Ibid.*, p. 315.

[9] *Ibid.*, p. 287, italics in original.

[10] *Ibid.*, p. 303, our italics.

The classic instance in which this method is to be observed is found in the essay " Of Money " where the concept of the general equilibrium position on the one hand is set over against the " shifting transition "[3] on the other. The question arises here as to whether Hume was concerned finally with a static quantity theory of money or, on the other hand, with a dynamic theory of the money circulation process: with comparative long run situations in the description of which money might be said to have a neutral effect, or with the intermediate process analysis. Certainly it is possible to say at this point that there does not exist at this stage of Hume's analysis any " unresolved ambiguity " as Professor Rotwein has recently claimed to be the case.[4] What does exist in Hume's apparently contrasting monetary analyses is a methodological tension, and it is the understanding of it which accords to Hume's work on the pure theory of money its correct position in the long development of economic thought.

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[1] Hume, *Essays*, p. 250.

[2] *Vide*, for example, *ibid.*, p. 315: ". . . but these cases, when examined, will be found to resolve into our general theory, and to bring additional authority to it ".

[3] *Vide* Keynes, *op. cit.*, p. 343 n.

[4] Eugene Rotwein, *David Hume*: *Writings on Economics*, 1955, pp. lxv, lxx. Professor Rotwein has taken up at length in this work an interpretative viewpoint which it is important to note, but to which prominence will not be given in this paper. This concerns the relation, if any, which exists between Hume's economic analysis and his philosophic attitudes in general. Dr. Rotwein finds Hume " systematically treating psychology and history as the joint centres of his analysis " (*op. cit.*, p. cvi) (*vide* also an interesting review article on Rotwein's work by S. G. Checkland in *Economic History Review*, December, 1956). A contrary view is taken by J. A. Schumpeter who concludes (*History of Economic Analysis*, p. 447) that ". . . for Hume his economics had nothing whatever to do with either his psychology or his philosophy ". *Vide* also Schumpeter's argument in *op. cit.*, p. 125 n. Taking Hume's psychological analysis as a starting point, it is an understandable step to imagine, as Rotwein appears to have done, that this should spill over into the philosopher's economics in such a way as to suggest on that level that a unifying principle is to be found in a psychology of human motivation and behaviour. While indeed there is much to be said for a system of economic thought which consciously frames its hypotheses in terms of a wider science of human nature, it is doubtful that this was the case in Hume's economics in the consistent and systematic sense necessary to make his psychology, as Rotwein suggests, a " centre of his analysis ". Certainly on the level with which we are dealing, namely the pure theory of money, the analysis of the *Essays* is philosophic in form, in that their analytical unity lies in a consistency of method, but the hypotheses themselves appear to sustain perfectly satisfactory *ad hoc* explanations, and do not make any necessary appeal to the author's psychological theories.

The principles of the valuation of money Hume found in a supply and demand theory. He does not consider the intrinsic value of money as such. "The prices of commodities", he had said, "are always proportioned to the plenty of money".[1] At this level of generality there exists a notion of a reciprocal and proportional relationship between the supply of money and its value. Hume is here working out a theory of value in an exchange economy.

On this level of generalisation it is argued that taking "any one kingdom by itself, it is evident that the greater or less plenty of money is of no consequence".[2] Here is the first statement of the "principles" descriptive of the monetary system, the first of Hume's "universal propositions".[3] The qualifying phrase is important as establishing the hypothetical nature of the argument.[4] What is important for the theory of the value of money is the logically separable effect of an inverse relation between the supply of money and its value. The full and final effect of an increase in the rate of flow of money

> "is not easily to be accounted for, if we consider *only* the influence which a greater abundance of coin has in the kingdom itself, by heightening the price of commodities, and obliging every one to pay a greater number of these little yellow or white pieces for everything he purchases".[5]

The effect of money on prices is separable in logic, and is thus handled by Hume in a separable definition. The *Essays* thus contain, as has been frequently pointed out, a careful statement of the quantity theory of the value of money. But to assume that therein lies the full or even the primary objective of the *Essays* is to confuse as a causal hypothesis what we have suggested is a logical proposition on an initial level of approximation.[1] To interpret Hume's argument on the theory of money values in terms of his methodological prologue as noted above, his intention thus far has been to exhibit what we have referred to as the modes of causation involved in the monetary exchange system. The further, and logically consistent, approximation involves the use of these theoretical relationships to describe the nature and the structure of the empirical monetary process.

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[1] Hume, *op. cit.*, p. 279. More particularly, "It is also evident, that the prices do not so much depend on the absolute quantity of commodities and that of money which are in a nation, as on that of the commodities which come or may come into market, and of *the money which circulates.* If the coin be locked up in chests, it is the same thing with regard to prices, as if it were annihilated; if the commodities be hoarded in magazines and granaries, a like effect follows. As the money and commodities, in these cases, never meet, they cannot affect each other" (*ibid.*, p. 287, our italics).

[2] *Op. cit.*, p. 279. Schumpeter (*op. cit.*, p. 316) remarks with relation to this proposition: "The question was: 'What is the quantity of money that a given country needs?' Hume seems to have been the first to show clearly and explicitly that *on the level of pure logic* this question has no meaning" (our italics). This summing up, it will be argued in the following text, is meaningful for Hume's position only in terms of the initial level of approximation there referred to.

[3] *Op. cit.*, p. 250.

[4] A similar and important use of the hypothetical and *ceteris paribus* device is found in the *Essay* "Of the Balance of Trade". This *Essay*, like the *Essay* "Of Interest", is not concerned to establish a proposition in the theory of money values. It aims to exhibit the general modes of causation subsisting in the theory of the international balancing mechanism and in doing so it places the following significant footnote against the oft-quoted statement that a change in the money supply will cause a proportionate change in commodity prices: "It must carefully be remarked, that throughout this discourse, wherever I speak of the level of money, I mean always its proportional level to the commodities, labour, industry, and skill, which is in the several states". *Op. cit.*, p. 524.

[5] *Ibid.*, p. 283, our italics.

In the description of this dynamic process, the thing which Hume finds in need of explanation is the fact that

> " in every kingdom, into which money begins to flow in greater abundance than formerly, everything takes on a new face; labour and industry gain life; the merchant becomes more enterprising, the manufacturer more diligent and skilful, and even the farmer follows his plough with greater alacrity and attention ".[2]

Thus there is raised the idea of the stimulus to activity, as opposed to prices, of a change in the money flow. The explanation then introduces the valuable theoretical notions of the time lags inherent in the adjustment of economic quantities following the disturbance envisaged, and the differential impact on incomes and prices. There emerges, to adopt a phrase from Keynes, a new " plurality of price levels ".[3]

> " To account, then, for this phenomenon, we must consider that though the high price of commodities be a necessary consequence of the increase of gold and silver, yet it follows not immediately upon that increase; but some time is required before the money circulates

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[1] But the error has persisted. Dr. Rotwein in his recent study of Hume's monetary theory has concluded that " one of the dominant features of his analysis is his emphasis on the classical view ". This Rotwein characterises as saying " that a greater quantity of money produced nothing beyond a proportionate increase in the price level " (Rotwein, *op. cit.*, p. lv). Adopting a different attitude to Hume from that proposed at present, Dr. Rotwein finds that his " adherence to the quantity theory is especially incompatible with the second part of his analysis . . . (his) dynamics of monetary change " (*ibid.*, p. lxv). Finally, the same author misunderstands Hume by concluding with relation to his work: " Seeking to preserve the quantity theory, he has supposed that the beneficial effects of any monetary expansion would ultimately be transitory, or that the net effect of the process would be a pure price increase " (*ibid.*, p. lxiv. Cf. *ibid.*, p. lxxi).

The distinction, however, between Hume's argument relative to the quantity theory and his causal hypothesis regarding the flow of money appears to have been recognised by Hegeland in his recent historical study. He suggests that for Hume " the effect (of an actual change in the quantity of money) is an increased trade and the final price rise will be in proportion to the increase in money *and* trade ". " Thus he showed that an *actual* change in the quantity of money will *not* cause proportionate price changes." (H. Hegeland, *The Quantity Theory of Money*, p. 35, italics in original.)

[2] Hume, *op. cit.*, p. 283. Johnson refers at this point to " the economic fermentation which money produces " and to the " beneficial inflation " involved. (*Predecessors of Adam Smith*, pp. 173, 195.) Monroe refers (inadequately) to " the temporary and transitional character of the stimulus derived from the new supplies of money ". (*Monetary Theory before Adam Smith*, p. 270.)

[3] J. M. Keynes, *Treatise on Money*, Vol. 1, p. 93.

> through the whole state, and makes its effect be felt on all ranks of people. At first, no alteration is perceived; by degrees the price rises, first of one commodity, then of another; till the whole at last reaches a just proportion with the new quantity of specie which is in the kingdom."[1]

Hume is concerned in this context with the piecemeal nature of the adjustment process. There is no conception of a homogeneous price level which moves in direct proportion with the supply of money. The levels of prices in general simply reach a " just proportion with the new quantity of specie ", or a new equilibrium level, taking account of the accompanying new higher level of production. In a different context the new position is simply described in general terms by referring to prices having " settled suitably to the new abundance of gold and silver ".[2]

The issue thus turns on the conception of the expansibility inherent in the economic system or, more explicitly, on the assumption that is made of an initial position of less than full employment. Let it be supposed that a favourable balance of trade has increased the money funds available for spending in the hands of " manufacturers or merchants ":

> " They are thereby enabled to employ more workmen than formerly, who never dream of demanding higher wages, but are glad of employment from such good paymasters. If workmen become scarce, the manufacturer gives higher wages, but at first requires an increase of labour; and this is willingly submitted to by the artisan, who can now eat and drink better, to compensate his additional toil and fatigue. He carries his money to market, where he finds everything at the same price as formerly, but returns with greater quantity, and of better kinds, for the use of his family. The farmer and gardener, finding that all their commodities are taken off, apply themselves with alacrity to the raising more; and at the same time can afford to take better and more clothes from their tradesmen, whose price is the same as formerly, and their industry only whetted by so much new gain. It is easy to trace the money in its progress through the whole commonwealth; where we shall find, that it must first quicken the diligence of every individual, before it increase the price of labour ".[3]

Several issues are raised at this point. The inital effect is clearly an employment effect. What we should call an elasticity of supply is postulated. The propagating element is a new level and structure of demand, satisfied initially at previously existing price levels. The inflation initially is a profit inflation, rather than a price inflation. Rises in turnovers and profits are realised, rather than rises in prices. Changes occur in the " manners and customs of the people ". At the new high level of activity " the same national cash has a much greater task to perform . . .the sphere of circulation is enlarged ".[1] Consumers demand not only " more " but " better " commodities. The structure of industrial and economic activity changes with the expansion and monetisation of the economic process.

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[1] Hume, *op. cit.*, p. 283.

[2] *Ibid.*, p. 294.

[3] *Ibid.*, p. 284.

Throughout the development of the theory of money in the eighteenth century one of the most important of the maturing influences was the introduction of the level of consumers' demand between the levels of the money supply on the one hand and commodity prices on the other. It was in this movement as it culminated in Sir James Steuart that there lay the most sophisticated criticism of the pure static quantity theory of the value of money.[2] Hume now takes up the same arguments. Consumer demand is introduced as a separable theoretical concept on both the micro-analytical and the larger socio-economic levels. On the last mentioned level the considerations impinge on the general problems of economic growth, and Hume takes issue with the " luxury " controversy of the century, drawing attention to Mandeville's " Fable of the Bees " in particular.[3] On the prior or micro-analytical level, however, the interposition of consumers' demands between the change in the money flow and the change in prices makes theoretically explicit both the time lags inherent in the working out of the process as referred to above, and the variable nature and structure of the end result. Postulating an increase in the supply of money, the answer to the question whether the initial effects will be exerted on the value of money (the prices of commodities) in the commodity sector, or on the price of money (the rate of interest) in the financial sector, will depend in part on the classes of persons into whose hands the increase in the money supply comes. In the hands of the merchants it will tend to swell the supply side of the loan markets and to lower the rate of interest. But in the hands of workmen and landlords, the latter of whom form traditionally the demand side of the loan markets, the new money supplies will give rise to new demands, higher production and prices, and the activation of the expansion process in the manner already described.

III

THE RATE OF INTEREST

Consistently throughout the *Essays*, Hume's argument is a warning against the assumption that the supply of money exerted direct and simple effects on any level of causation in the system. It exerted a direct effect on neither the level of prices and activity nor the rate of interest. The influence of the money supply and of changes in its rate of circulation were always indirect, via the interdependent relations existing within the system. The message of Hume's monetary analysis was to point out the mistake of imagining to the contrary. Similarly for the theory of interest the argument is that the absolute level of the money supply as such has no significance for the level of the rate of interest and, furthermore, that changes in the supply of money affect the rate only indirectly, and as they affect more fundamental determinant forces.

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[1] Cf. Hume, *op. cit.*, p. 289.

[2] Sir James Steuart, *op. cit.*, Vol. I, p. 528.

[3] *Vide* Hume, *op. cit.*, p. 269. The argument as to " innocent luxury " and economic development is found in extenso in *Essay II* " Of Refinement in the Arts ", *op. cit.*, pp. 265-78. Cf. also pp. 288-9.

At the beginning of the discussion a distinction is drawn between the rate of interest as a theoretical or logical concept on the one hand, and the determination of the effective rate on the other. On the first of these levels the rate of interest is the expression of a ratio between monies differently dated. The size of the ratio did not depend simply on the quantity of money units in which both the capital sum borrowed and the interest income on it were measured.[1] Comparing one country with another, or one point of time with another, it was not possible to argue directly from the comparative supplies of money to the comparative rates of interest. " The rate of interest . . . is not derived from the quantity of the precious metals."[2] " The difference depends not on the quantity of money, but on the habits and manners which prevail."[3]

More particularly, the actual determination of the rate depended on the way in which the interdependent forces in the monetary system worked out their effects at this point:

> " As to the reduction of interest which has followed in England, France, and other kingdoms of Europe that have no mines, it has been gradual, and has not proceeded from the increase of money, *considered merely in itself*, but from that of industry, which is the natural effect of the former increase, in that interval, before it raises the prices of labour and provisions."[4]

Following a change in the supply of money it is not money " considered merely in itself " which is the operative cause of change in the rate of interest. Interest will change as does the money supply if a change is thereby caused in " the proportion between the borrowers and lenders ", and in certain circumstances this may be the case.[5] But the ultimate principles of causation relative to the rate of interest are to be found on a different level. In the context of the economic process now envisaged the alteration in the rate of interest depends on the change in the economic conjuncture, particularly in the level of " industry ", which will have been caused by the change in the money supply.

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[1] " Were all the gold in England annihilated at once . . . were gold rendered as common as silver, and silver as common as copper . . . if you lent me so much . . . by receiving five per cent. you always receive proportional . . . however represented, whether by yellow or white coin, whether by a pound or an ounce. It is in vain, therefore, to look for the cause of the fall or rise of interest in the greater or less quantity of gold and silver, which is fixed in any nation " (Hume, *op. cit.*, pp. 293-5).

[2] *Ibid.*, p. 294.

[3] *Ibid.*, p. 296.

[4] *Ibid.*, p. 305, our italics.

[5] *Vide ibid.*, pp. 302-6.

While Hume, however, thus considers on a more advanced level the monetary elements in the determination of interest, his theory is basically a " real " theory in several respects. Firstly, and apart from the monetary implications referred to, the rate of interest depends finally on the development of the supply of and demand for capital resources.[1] Secondly, Hume has looked behind the monetary phenomena in the markets for loan money to the real savings process that determines the capital supply, and he examines also the more fundamental reasons why loan monies are borrowed and lent. His arguments summarise as follows:

> " High interest arises from three circumstances: A great demand for borrowing; little riches to supply that demand; and great profits arising from commerce. . . . Low interest, on the other hand, proceeds from the three opposite circumstances."[2]

Within this causal nexus Hume establishes a further twofold generalisation. This derives from his division of society into social and economic classes. Firstly, the demand for loanable funds was traditionally and predominantly a consumption demand. It was the " prodigal landlord " who traditionally constituted the demand side of the market. Secondly, the supply of loan monies derived from the savings of the merchant and trading classes. The rate of interest depended, in the main, on prodigality and thrift. While there were exceptions within these general categories and Hume sees, for example, that part of the " uses for which men borrow money " may be to " support a manufactory ",[3] indicating an industrial demand for loanable funds, it is mainly for its influence on the *supply* side of the capital market that he looks to the development of industry.

It is in this sense that the *Essays* conclude that

> ". . . low interest and low profits of merchandise, are two events that mutually forward each other, and are both originally derived from that extensive commerce, which produces opulent merchants, and renders the money interest considerable. . . . When commerce has become extensive, and employs large stocks, there must arise rivalships among the merchants, which diminish the profits of trade, at the same time as they increase the trade itself. The low profits of merchandise induce the merchants to accept more willingly of a low interest . . .".[4]

It is in the sense, therefore, that low profits lead to a lower absorption of loan funds for reinvestment and a larger supply for lending at interest, that they give rise in turn to a low rate of interest (on predominantly consumption loans).[1] It is not that profits, reflecting a low marginal efficiency of capital, give rise to a low effective rate of interest by lessening the demand for loanable funds for investment purposes. On the contrary, " low interest and low profits . . . mutually forward each other " because of their interaction on the *supply* side of the loan market, in determining the relative directions in which loan monies are offered and supplied.

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[1] *Vide* Hume, *op. cit.*, p. 303.
[2] *Ibid.*, p. 295.
[3] *Ibid.*, p. 303.
[4] *Ibid.*, p. 301. Cf. *ibid.*, pp. 296-7, 298, 300.

The theory is thus again a supply and demand theory, as it was in the case of Locke some sixty years previously. But advances had occurred in the analysis of the savings process which lay behind the market supply, in the conception of the indirect causation from monetary change to the rate of interest, and in the examination of the relation of the determinant forces to the state of economic activity.

This, finally, is the measure of the importance of Hume's place in the history of monetary analysis. On the respective levels we have examined there is discernible a preoccupation with the structure and the process of economic change. In Hume's *Essays* the concept of change is woven into the fabric of the generalisations and principles by which the economic process itself is described. The generalisations and principles, moreover, are understood as approximations which " always prevail in the general course of things ", though there may be particular and disturbing forces at work which cause them to " fail in particular cases ".[2] In the light of this procedure the *Essays* exhibit a close affinity—closer than has often been admitted in the history of thought—to the successive attempts of the early eighteenth century to establish a theoretical system adapted to the explanation of the monetary process as a whole. The description of these attempts, however, in a unified and systematic form, still remains one of the major gaps in the literature of the history of economic thought.

London.

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[1] Cf. Hume, *op. cit.*, pp. 315-6. This, moreover, is of interest in relation to the historical literature. The question is raised as to the manner in which a statement such as that of Professor Hansen in the following is to be understood: " Thus in so far as the increase in the money supply in the short run stimulates industry, the effect is to promote fundamental long run conditions favourable to a low rate of interest "—A. H. Hansen, *Monetary Theory and Fiscal Policy*, p. 217. The effect of the industrial expansion, it can be said, is to be looked for on the supply side of the loan market, and Hansen would appear to place undue weight on Hume at this point when he concludes that " This comes to much the same thing as the Wicksellian analysis: investment is stimulated when the market rate of interest falls below the productivity rate "—*Ibid*, p. 217. It is in Cantillon rather than Hume that the *investment* demand for loanable funds is of prime importance. It is noteworthy, however, as is suggested in the text above, that in so far as a " reservation " demand for loanable funds exists and suppliers of capital invest in further business enterprises, depending on the level of profits available, rather than supply their funds on the loan markets at interest, there can be said to exist a " productivity " demand for loan funds.

[2] Hume, *op. cit.*, p. 250.

Tariffs, Subsidies and the Terms of Trade[1]

By W. M. Corden

I

1. Is a tariff on imports or a direct subsidy to the import-competing industry a preferable method of protection? The discussion of this problem here will focus attention on two of the many considerations which affect the choice between tariff and subsidy as a protective device: (1) the relative effects of the two methods on the pattern of consumption, and (2) the effects on the terms of trade. In Part II it will be assumed that the country cannot affect its terms of trade. The core of the argument begins in Part III when the terms of trade effect is introduced. The argument of this paper can be regarded as an extension of the theory of the optimum tariff.

2. The principal assumptions, to be maintained throughout, are:

(i) Revenue derived by the government from a tariff is immediately returned to the community by a reduction in direct taxes, and the cost of subsidies is covered by an increase in direct taxes. Thus the government's fiscal position is assumed to remain unaffected by the choice of protective device.

(ii) The internal distribution of income is unaffected by any changes in the model, and the device of community indifference curves can be employed.

(iii) The elasticity of substitution between leisure and work is zero; so taxes have no disincentive effects.

(iv) Full employment is maintained by fiscal or other methods, and the balance of payments is kept in equilibrium by adjustments in internal prices or the exchange rate; it is a "*real*" model.

(v) There are no taxes or subsidies, other than those under discussion, and no monopolistic interferences with the adjustment of production or consumption.

(vi) Finally, there are only two products—*wheat* and *clothing*. Wheat is the product which is both imported and home-produced and which is to be protected so that home production of it will increase. Some clothing output is home-consumed and some exported. The marginal rate of transformation of clothing into wheat in home production is assumed to diminish. The assumption of a two-product model is required only for the sake of simple geometric exposition.

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[1] I am indebted to Mr. J. Black, Mr. R. G. Lipsey and Professor J. E. Meade for many helpful suggestions in the preparation of this paper.

3. With these simple assumptions the difference between a tariff on wheat imports and a direct subsidy to the home wheat industry as a method of protection can be summed up as follows. With a tariff the price of wheat at home is higher than its price abroad, the difference being the tariff margin. But the price of wheat facing the consumer at home is the same as that facing the producer. In terms of the two-product model, the foreign price ratio (or terms of trade) diverges from the home price ratio, but the home price ratio is equal both to the marginal rate of transformation and the marginal rate of substitution at home. With a subsidy, on the other hand, the foreign price ratio is the same as the home price ratio—the price ratio facing home consumers. But the price of wheat facing the home producer is now greater than its price in the home (and the foreign) market. Thus the home price ratio is no longer equal to the marginal rate of transformation at home, though it is still equal to the marginal rate of substitution. To sum up, if :

F=foreign price ratio
T=marginal rate of transformation (in home production)
S=marginal rate of substitution (in home consumption)

Then
with a *tariff* $T=S$ but $F \neq T$ or S
with a *subsidy* $F=S$ but $T \neq S$ or F

II

4. Now assume provisionally that the country cannot affect its terms of trade. In these conditions it can be shown geometrically that a given degree of protection—a given shift of productive resources out of the clothing into the wheat industry—will involve a lesser fall in welfare when achieved by subsidy than when brought about by tariffs. The argument is the same, essentially, as the classical case against indirect taxation.[1]

5. In Fig. 1 clothing is measured along the OX axis and wheat along the OY axis. AB is the home transformation curve showing the various combinations of wheat and clothing which could be produced with

[1] See M. F. W. Joseph, "The Excess Burden of Indirect Taxation", *Review of Economic Studies*, June, 1939.

An explicit statement of the proposition of this section is in J. E. Meade, *The Theory of International Economic Policy*, Vol. 2 *Trade and Welfare* (Oxford University Press, 1955), pp. 312-14. Professor Meade shows that a tariff designed to redistribute incomes interferes both with the "optimisation of trade" (i.e. in the language of this paper, distorts the consumption pattern) and with the "maximisation of production" (i.e. distorts the production pattern). On the other hand, a direct subsidy interferes only with production but not with trade. The present paper adds to the argument up to this point only by illustrating it diagrammatically. See also *Trade and Welfare*, p. 168.

Professor Meade's comparison is not extended to allow for terms of trade effects (though there is a hint in the footnote p. 162). The later Chapter 17 on the terms of trade argument for trade control does not explore the distinction between tariff and production subsidy.

a given supply of fully-employed factors of production working a given number of hours. The quadrant XOY contains a map of community indifference curves having the usual characteristics of individual indifference curves.

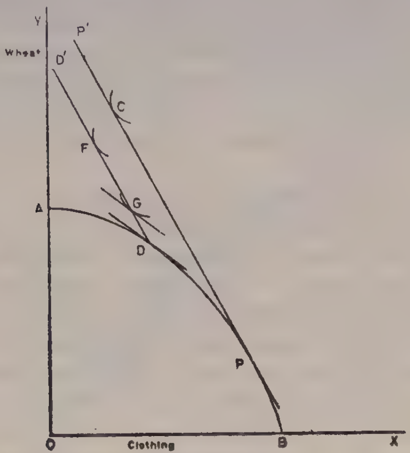

FIG. 1

The given foreign price ratio is represented by the slope of the line PP′. In free trade competitive equilibrium (assuming no external economies or diseconomies) the combination of wheat and clothing produced is represented by the production point P and the combination consumed by the consumption point C. The difference between production and consumption gives exports and imports.

The act of protection is to shift the production equilibrium to D. If this shift is attained by subsidy the internal price ratio will remain equal to the foreign price ratio and the new consumption equilibrium will be at F, where a community indifference curve is tangential to the foreign trade line DD′ (parallel to PP′).

Now suppose that instead of a subsidy a tariff is used to shift production from P to D. Now the home price ratio and the foreign price ratio will be divorced ; the home price ratio must alter sufficiently to equal the marginal rate of transformation at the new point of production, D. The consumption equilibrium will therefore shift from F to G, where DD′ is intersected by a community indifference curve having at the point of intersection the slope of the tangent at D.

Clearly the indifference curve at G represents a lower level of satisfaction than the curve at F. In this simple model the essence of the protective effect is indicated by the movement from the indifference curve through C to the indifference curve through F. The further movement from F to G represents the cost of protecting by tariff rather than by subsidy—the cost of distorting not only the production but also the consumption pattern.

III

6. Now assume that the terms of trade are variable ; the greater the volume of trade the worse the terms of trade. More specifically it will be assumed at this stage that the elasticity of the foreign offer curve is less than infinite but greater than unity, and that this elasticity is constant over the relevant range.[1]

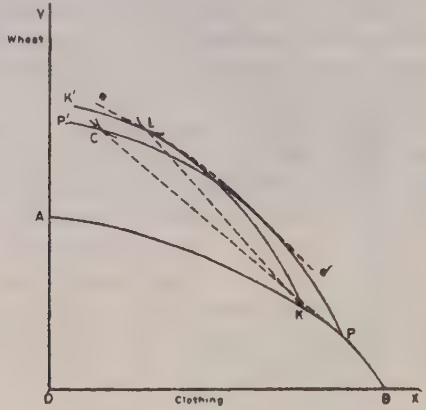

FIG. 2

7. In Fig. 2, P is again the production equilibrium under free trade, and C the consumption equilibrium. The free trade terms of trade are given by the slope of PC which is equal to the marginal rate of transformation at P and the marginal rate of substitution at C.

PP′ is the foreign offer curve with base at P ; its curvature shows that the terms of trade deteriorate as the trading point moves up the offer curve, away from P.

8. K is the production equilibrium and L the consumption equilibrium which would result from an optimum tariff.[2] The optimum tariff establishes the condition that the home price ratio is equal not to the foreign price ratio, as it would be under free trade, but to the slope of

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[1] The " relevant range " includes what will be described below as the " limited optimum " position. At this position the elasticity of the foreign offer curve must be greater than unity. This follows from the nature of the optimum tariff. If then, as is assumed up to Part V, the elasticity is constant over the relevant range, it follows that this constant elasticity must be greater than unity. In Part V this assumption is no longer necessary and at points above the " limited optimum " the offer curve elasticity could be less than unity. (The definition of the elasticity of the foreign offer curve implied here is in terms of the demand for exports as a function of the terms of trade. See footnote 1 on next page.)

[2] See N. Kaldor, " A Note on Tariffs and the Terms of Trade ", *Economica*, November, 1940 ; T. de Scitovsky, " A Reconsideration of the Theory of Tariffs ", *Review of Economic Studies*, 1941-2, reprinted in the American Economic Association's *Readings in the Theory of International Trade* (Philadelphia, the Blakiston Company, 1949) ; J. de V. Graaff, " On Optimum Tariff Structures ", *Review of Economic Studies*, 1949-50 ; H. G. Johnson, " Optimum Welfare and Maximum Revenue Tariffs ", *Review of Economic Studies*, 1950-51, and other literature cited in Graaff, *op. cit.*

the tangent to the foreign offer curve at the trading point.[1] The foreign price ratio or terms of trade is indicated by the slope of KL. This gives the *average* rate at which wheat can be exchanged into clothing on the foreign market at this particular volume of trade. The tangent to the foreign offer curve at L, on the other hand, indicates the *marginal* rate at which the two goods exchange on the foreign market. In the optimum situation this marginal rate of exchange is equal to the home price ratio and hence (in the absence of subsidies, and taxes, and assuming perfect competition, and no external economies or diseconomies) to the marginal rate of transformation and substitution at home.

Geometrically the optimum position can be found as follows. Imagine the offer curve PP′ (or KK′) to slide along AB, hence changing the production equilibrium. The axes of measurement of the offer curve remain parallel to the axes in Fig. 2. One can imagine an infinite number of positions for the curve, each position involving a different origin on AB. As the offer curve slides along AB it will trace out an " envelope ", of which ee′ in Fig. 2 is a section. This envelope shows the maximum consumption of wheat possible for any given consumption of clothing as the offer curve is moved along the transformation curve in the way described. Given AB and given the foreign offer curve, no consumption equilibrium can be above it. At some point a community indifference curve will be tangential to the envelope ; this then represents the best consumption point which can be reached ; it is in fact the point L. If the offer curve which is tangential to the indifference curve at L is followed down to AB, the point K is obtained indicating the production equilibrium resulting from an optimum tariff.[2]

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[1] There are various ways of stating the optimum tariff formula, as shown by H. G. Johnson *op. cit.* In terms of the elasticity of the foreign reciprocal demand for exports (e)—in fact literally the elasticity of the foreign offer curve—the optimum tariff rate, $t=e-1$. But, as Johnson shows, from the reciprocal demand or foreign offer curve can be derived an ordinary demand curve expressing the demand for exports as a function of the exchange ratio between exports and imports (the " barter terms of trade "). In terms of the foreign elasticity of demand for exports, so defined (e′), $t = \frac{1}{e'-1}$. Similarly, in terms of the foreign elasticity of supply of imports (e″), $t = \frac{1}{e''}$

[2] See R. E. Baldwin, " Equilibrium in International Trade : A Diagrammatic Analysis ", *Quarterly Journal of Economics*, November, 1948. Baldwin developed the concept of this " envelope ", and indeed has been the first (I think) to make use of the technique of placing the foreign offer curve on top of the home transformation curve. He explores various properties of the envelope, and in particular proves " that the slope of the offer curve where it is tangent to the envelope (or traces out part of the envelope) will always equal the slope of the transformation curve at the origin of the offer curve on the transformation curve ".

This is in fact the same proposition as Professor Meade's in *A Geometry of International Trade* (Allen & Unwin, London, 1952), p. 13, that the slope of a " trade-indifference curve " at any point is equal to the slope of the " corresponding " consumption-indifference curve at the " corresponding " point. Professor Meade has pointed out to me that if (in Figure 2, this paper) one takes ee′ as given, and slides KK′ along it, keeping KK′ tangential to ee′, so that the foot of KK′ traces out AB, then this is an exact analogy of taking a consumption indifference curve, sliding a production block along it, and letting a fixed point on the production block trace out a trade-indifference curve.

IV

9. Now we come to the heart of the matter. Suppose that it is desired, say for strategic or other political reasons,[1] to protect the wheat industry sufficiently for the production point to move to the left of K. Let M (Fig. 3) represent this desired " excess protection " production point. Possible consumption equilibria are now on MM′, the foreign offer curve with base at M.

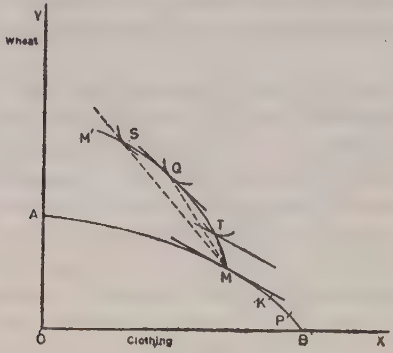

FIG. 3.

If the protection were achieved solely by subsidy the consumption equilibrium would be at S. The foreign price ratio is given by MS and this will be equal to the home price ratio and hence to the marginal rate of substitution at S. But in order to obtain a production shift to M the price ratio facing home producers must be equal to the slope of the tangent at M—the marginal rate of transformation. The difference between the slope of this line and of MS gives the subsidy (and, expressed as a proportion of the slope of MS, it gives the subsidy *rate*).

If, on the other hand, the protection were achieved solely by tariff the consumption equilibrium would be at T. At this point a community indifference curve cuts MM′ having the slope of the tangent at M. In other words the marginal rate of transformation at home is equal to the marginal rate of substitution at home, both being equal to the home price ratio. The difference between this home price ratio and the foreign price ratio (the slope of MT) gives the tariff (and expressed as a proportion of the foreign price ratio, the tariff *rate*).

It can be seen that now there is no presumption that a subsidy places the community on a higher indifference curve than a tariff.

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[1] The reason for the protection could also be based on the infant-industry argument. This is not incompatible with the assumption of a diminishing marginal rate of transformation between the two products, since the infant-industry argument may be based not on decreasing opportunity costs at any given moment of time but on the expectation of falling costs over time. The loss of welfare resulting from the excess protection indicated by the analysis here should then be regarded as the *static* cost of protection against which the expected future benefits should be weighed.

In the absence of special conditions attached to the demand pattern, the transformation curve and the offer curve, it cannot be said whether the indifference curve through S is higher or lower than the curve through T, or whether indeed the same curve runs through both points.

10. Clearly the best consumption position is at Q where an indifference curve is tangential to MM.′ This is the optimum position in the limited sense that the production point M is taken as given. The slope of the tangent at Q indicates the home price ratio which would achieve this particular consumption equilibrium, given the foreign offer curve and the production point M. The difference between the slope of the tangent and the slope of MQ, the foreign price ratio, gives again the tariff. But the home price ratio brought about by this tariff will not in itself bring forth the production indicated by the production point M. The difference between the home price ratio and the marginal rate of transformation at M gives the subsidy required to supplement the tariff.

Therefore to obtain the limited optimum position Q a combination of tariff and subsidy is required. Now the significant feature is that the tariff rate required is in fact that given by the optimum tariff formula, a formula which always establishes the condition that the home price ratio is equal to the slope of the tangent to the foreign offer curve. To obtain the limited optimum Q, the optimum tariff should be imposed and any further protection required should be brought about by supplementing the tariff with a subsidy.[1]

V

11. Now consider the possibility that the elasticity of the offer curve changes with the volume of trade. The more probable case is where the elasticity of the foreign offer curve falls as the volume of trade rises.[2] In this case the optimum tariff rate falls as the degree of protection increases. So a surprising conclusion emerges from our argument. Suppose, to begin with, that the optimum tariff is in operation. It is then desired to increase protection further. This should be done, as has been shown, by supplementing the optimum tariff with a subsidy. But the trade-restricting effect of this subsidy to the import-competing

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[1] If the degree of protection desired is *less* than that resulting from the optimum tariff alone, the optimum tariff should be supplemented by a *tax* on the wheat industry. One special case of this is when the free trade output, represented by the point P, is desired. Only in the special case when the degree of protection desired is K, is a tariff alone a satisfactory policy. In this case the points Q and T coincide. In no case will a subsidy alone (or a tax on the wheat industry—i.e. a negative subsidy) achieve the limited optimum. For, whatever the production point, S must always be above Q.

[2] When a country is not able to extend the range of its export products, so that an increased volume of exports is brought about by greater sales of its existing exports rather than by widening the export range, there is possibly some presumption that the foreign elasticity of demand for its exports falls the greater the volume it places on the foreign market. Of course the elasticity of the offer curve depends also on the elasticity of supply of imports.

industry will now alter the optimum tariff rate itself. The tariff rate should actually be lowered! Therefore, at the same time as the direct subsidy to the wheat industry is raised, the tariff on wheat imports should fall. It should fall so as to modify, but not of course to offset completely, the effect of the subsidy on the volume and terms of trade.

VI

12. Finally it should be pointed out that the conclusions of this paper are subject to the same qualifications as the classical case against indirect taxation, a case which has been weakened (or even overthrown) by the introduction into the model of (i) a third good—leisure—which can be substituted for the taxed or the untaxed good, and (ii) an existing network of taxes and other factors causing a divergence from the perfect competition optimum.[1]

Furthermore, no conclusions on the choice between tariffs and subsidies can clearly be drawn without taking into account the relative administrative and political advantages, the fiscal effects and the repercussions on the internal distribution of income.[2]

London.

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[1] See I. M. D. Little, " Direct *versus* Indirect Taxes ", *Economic Journal*, September, 1951 ; D. Berry, " Modern Welfare Analysis and the Forms of Income Redistribution " in A. T. Peacock (ed.), *Income Redistribution and Social Policy* (Jonathan Cape, London, 1954), and the references cited in these two articles.

[2] See R. L. Threlfell, " The Relative Merits of Tariffs and Subsidies as Methods of Protection ", *South African Journal of Economics*, June, 1946; G. W. G. Browne, " A Note on Tariffs and Subsidies ", *loc. cit.*, September, 1946; J. de V. Graaff, " A Note on the Relative Merits of Tariffs and Subsidies ", *loc. cit.*, June, 1947: J. B. Brigden and others, *The Australian Tariff : An Economic Inquiry* (Melbourne, 1929).

See also J. E. Meade, *Trade and Welfare*.

Notes on the Place and Significance of the Money Multiplier

By E. J. Mishan

The derivation of a multiplier from velocity analysis by Mrs. Lutz[1] has some intrinsic interest as an exercise in ingenuity besides giving a new twist to an old controversy. Her essay certainly merits more sympathetic attention than that accorded to it by Mr. Archibald whose paper[2] gives the impression that in its neglect of important economic relationships her theory is unacceptable.

The purpose of these notes is to correct this impression, to place Mrs. Lutz's multiplier in a more familiar setting, and to suggest the kinds of criticism it may reasonably be subjected to.

I

It seems to me that owing to an inadequate appreciation of what Mrs. Lutz succeeded in demonstrating Mr. Archibald has seized on the wrong issues. He is particularly disturbed by the absence in her essay of any mention of the liquidity preference function. It should, however, have been apparent that the multiplier she elaborates depends entirely on the *absence* of such a function. For the existence of a liquidity preference function entails that any initial autonomous increment of expenditure gives rise to a sequence which—granted the marginal propensity to spend is less than unity—eventually becomes zero, whereas the Lutz multiplier, in response to a single increment of money, is determinate and finite regardless of the value of the marginal propensity to spend.

If we consider the liquidity preference function as the essential differentiating feature of the Keynesian system we are impelled to place Mrs. Lutz's multiplier within the Classical monetary system.[3] Once we do so everything falls into place and there is no difficulty in demonstrating, as we shall do, that the multiplier in question derives in a straightforward fashion from the traditional Classical postulates in their purest form. It also follows that Mr. Archibald's criticisms are out of context: if the function of the rate of interest is, in the Classical system, to equate current saving and investment only, the distinction between a goods market and a money market is irrelevant.

[1] Vera Lutz, "Multiplier and Velocity Analysis: a Marriage," *Economica*, February, 1955.

[2] G. C. Archibald, "Multiplier and Velocity Analysis: an Annulment," *Economica*, August, 1956.

[3] Fixed money wage rates and unemployed resources are quite compatible with the essential postulates of the Classical monetary system.

For a brief comparison of the theoretical and policy implications of the Classical and Keynesian monetary systems, each based on the minimum number of postulates, see part VI of my paper, "Toward a General Theory of Price, Income, and Money," *Journal of Political Economy*, 1952.

That is to say, whether income is disposed of in the purchase of consumer goods or in the purchase of securities is of no consequence so far as current expenditure is concerned, for all security purchases (saving) are transformed into purchases of goods (investment) by means of continuous fluctuations in the prices of securities.[1] Furthermore, allowing that the hoarding relation is stable, there is in the Classical system no effective difference between monetary and fiscal policy: if the government, without raising additional money, spends an additional 100 units in the purchase of securities their price rises to the point where there is an excess of expenditure of 100 units in the market—the same effect, that is, as direct expenditure by the government.

In brief then, the burden of Mr. Archibald's criticism turns out to be that Mrs. Lutz was not building her multiplier within a Keynesian framework, a heterodoxy of which I suspect she is already aware. In fact, as I will now show, her multiplier is an integral part of the Classical system.

II

The simplest formulation of the Classical monetary hypothesis is $Y = MV$[2] where Y is the induced or resultant variable, M the autonomous or causal variable, and V the stable or empirical variable. Consideration of changes in V, whether exogenous or resulting from factors operating in a broader framework of reference, invites the concept of a division of the total stock of money, M, into (*a*) an active or " circulating " component, M_T, used only for transactions purchases, and (*b*) the remainder held continuously as balances for various motives, conveniently referred to as hoards, M_H.[3] With the total stock of money unchanged, a movement of cash from the M_T to the M_H component entails a reduction of money income and also of velocity.

Mrs. Lutz's multiplier may be derived directly from these simple concepts particularly if we adopt her device of a unit period, the period over which M_T has a velocity of one and is, therefore, equal to income created within that period.

Now the hoarding coefficient, h, may be taken as relating to the total stock of money or to income; i.e., either (1) $M_H = hM$, or (2) $M_H = hY$, this being the assumption adopted by Mrs. Lutz. In a static analysis, however, it makes little difference which we adopt.

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[1] To the extent that, starting from a position of equilibrium, any part of the public's current income is not disposed of in the purchase of goods or securities cash hoards are augmented with the result that money income, and velocity, are reduced.

The critical assumption is, of course, that the hoarding relation, and therefore velocity, remain stable for long enough to give the theory explanatory (predictive) value.

[2] Or $Yk = M$, the " Cambridge " equation, k being the reciprocal of the per annum velocity. There are, as is well known, many elaborations of the basic variables, not to mention highly sophisticated developments such as the Robertsonian analysis. But we need no more than the original core of the Classical system in order to derive Mrs. Lutz's multiplier.

[3] The hoarding component is not related in any way with the rate of interest, or with any price or group of prices by themselves. It will, however, be directly connected with movements in the general level of prices.

Assume in alternative (1) an injection of new money $\triangle M$ in the unit period. Then by definition $\triangle M_T = \triangle M - \triangle M_H$. But by definition of the unit period, $\triangle M_T$ is equal to the increment of income in that period, $\triangle Y$; and by assumption $\triangle M_H$ is equal to $h . \triangle M$. Hence, $\triangle Y = \triangle M - h \triangle M$, or $\triangle Y = \triangle M(1-h)$. The multiplier, $(1-h)$—which, of course, is also the velocity of $\triangle M$ per unit period—tells us that for a given increment of cash, $\triangle M$, the level of income per unit period is, in equilibrium, raised by $\triangle M(1-h)$.

Adopting the second alternative, $\triangle M_H = h \triangle Y$, yields us the Lutz multiplier. For by substituting in the definitional equation above we obtain $\triangle Y = \triangle M - h \triangle Y$ and therefore $\triangle Y = \triangle M \cdot \frac{1}{1+h}$.[1]

If we now try to fit these relations into a dynamic framework by selecting a simple period analysis as does Mrs. Lutz we find the first alternative assumption, $M_H = hM$, the less interesting of the two. For if we relate hoarding in the period to the new money injected in the preceding period the process of adjustment comes to an end in the second period, the required relationship between cash hoarded and the total stock of cash being then re-established.

Turning to the second alternative we find that, in common with alternative (1), income of the second period is less than that of the first period by the amount of the additional cash hoarded in the first period. But, since hoarding is now related to income,[2] a reduced income in the second period concurrently reduces required hoarding. The consequent dishoarding raises income in the third period, the additional hoarding therefore lowering income in the fourth period, and so on. It should be noticed in particular that no extraneous element has been secreted into the Classical system in order to derive this oscillating sequence. Granted only a simple lagged response, it can hardly be otherwise.

It comes about in the following way. We assume, as we must, that income of any period Y_t is equal to the active cash passed down from the preceding period. This implies that Y_t is equal to the income of the preeeding period, Y_{t-1}, *less* the net change in hoarding of that period. But the net change in hoarding of that period is equal to the hoarding required in that period *less* the hoarding required in the period before—or $h.Y_{t-1}$ *less* $h.Y_{t-2}$. Consequently $Y_t = Y_{t-1} - h(Y_{t-1} - Y_{t-2})$, $\left\{ \begin{matrix} Y_0 = O \\ Y_1 = \triangle M \end{matrix} \right\}$. As Mrs. Lutz illustrates, such an equation yields an oscillating sequence which tends to $\triangle M \frac{1}{1+h}$ as t tends to infinity. What she has shown, therefore, is that a simple dynamic multiplier derived in a direct manner from the Classical postulates is stable (converges) and tends to the same value as the static multiplier.

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[1] The amount of the increment of money which, in equilibrium, is held in hoards is the difference between $\triangle M$ and $\triangle M_T$, or $\triangle M \frac{h}{1+h}$.

[2] The public attempts in each period to adjust the volume of hoards to equal h times the income of that period but, as Mrs. Lutz points out, the adjustment is effective only in equilibrium. Though the introduction of a dynamic process detracts from the theoretical stability of velocity, it is theoretically determinate for any period over the interval of adjustment. This implication therefore does not weaken the velocity analysis.

Making these multipliers explicit, however, has not in any way brought velocity analysis closer to the Keynesian income-expenditure approach. The theoretical and policy implications of the Classical hypothesis remain substantially unaffected.[1] A single injection of money raises permanently the level of money income regardless of how it enters the economy. In the Keynesian system, on the other hand, a single injection of money if it is effective at all can, at best, only generate temporary increments of income. Velocity is still the stable, or predictable, relation in the Classical hypothesis. It varies unpredictably in the Keynesian system.

III

Since selection is the essence of theorizing, charges of omission in a theory can be made only by reference to some other theory. Even if the latter theory has proved to be fruitful it does not follow that the former is in error, for it too may yield results comparable with or, for some specific problems, superior to the latter theory. In principle then Mr. Archibald's strictures on Mrs. Lutz's construction are not tenable.

Nevertheless her essay is open to two kinds of criticism. First, since her construction builds upon the Classical foundations it stands or falls with them. In the second place, her own appraisal of the role and significance of her multiplier may be called into question.

As to the first, a note of this kind is obviously no place to pronounce on issues which have been central for so long. Two brief observations, however, may be in order.

It is clear to those who have dipped occasionally into the literature that the Classical theorists were not ignorant of the existence of a market for old securities any more than they were ignorant of a market for old houses. Nor did they believe that in point of fact current investment and saving were brought into equilibrium by price fluctuations in the market for securities. It was simply believed, as quantity theorists believe to this day, that if a causal explanation of variations in money income is sought attention should be directed primarily toward variations in the quantity of money. A theory containing M,V, and Y (or elaborations of these variables, according to the problem in hand) was for such purposes quite adequate. Whether it is good enough for the changed conditions of today, and whether it is inferior to models deriving from Keynesian postulates in some of its implications, is clearly an empirical question. Needless to remark, there are some notable economists who still stand by the quantity theory.[1]

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[1] I am allowing for the interesting refinement in one of the policy implications imparted by the dynamic multiplier which was indicated by Mrs. Lutz. It can be expressed this way: if it is required to raise income from its present level to a higher level while maintaining that level free of fluctuation from the start, $1/1 + h$ of the appropriate multiplicand is to be injected in the first period, the remainder in the second period.

Interesting though this is, I would not care to have the Classical theory stake part of its reputation on this particular implication.

There is more general agreement that in studies of inflation, especially over historical periods, the quantity theory is fairly satisfactory. Keynes himself was disposed to allow that once full employment had been reached the quantity theory came into its own.[2] But there is little else that can be said without much qualification which would command general assent. If I cannot quite see the quantity theory coping with the growing range of macro-economic problems that are tackled with increasingly elaborate models based on the Keynesian hypothesis I must confess at the same time to an intellectual attachment to the Keynesian approach.

Turning now to Mrs. Lutz's own estimation of her accomplishment, a clue is provided by the following passage in the first part of her paper: " The principal claim of multiplier analysis," she writes, ". . . is to have provided an explanation of income generation and propagation in terms of a causal process, or dynamic multiplier series ".[3] If, so it seems, she can wring something like a dynamic multiplier from velocity analysis then the latter will be well on the way to respectability.[4]

The meaning of the phrase " in terms of a causal process " depends on whether the accent is on the word causal or the word process. It should not be on the former. Static theory is causal: a change in equilibrium is to be attributed to a movement of one, or several, of the parameters of the system. *The General Theory* was a static theory.

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[1] For example, Milton Friedman in an important empirical study (" Prices, Income, and Monetary Changes in Three Wartime Periods," *American Economic Review*, 1952, Papers and Proceedings, pp. 612–625) adduces weighty evidence in favour of the Classical quantity theory as against the Keynesian income-expenditure theory. The wartime periods he selects were, however, periods of inflation during which, it may be argued, additional doses of money were not—as envisaged by Keynes for underemployment economies—to a large extent eventually absorbed in the securities market. Given full employment, additional doses of money, since they raise prices (and also therefore money income in roughly the same proportion) are required for the most part to be kept in circulation for transactions purposes.

[2] *The General Theory*, p. 289.

[3] *Op. cit.*, p. 32.

[4] In her eagerness to show that her multiplier was of the right breed Mrs. Lutz made comparisons which tended rather to obscure its character. In footnote 4 on page 32 she differentiates her multiplier from the Lange multiplier, $1/1-(\alpha+\beta)$ apparently on the grounds that her multiplicand is new money only while Lange's multiplicand contains autonomous expenditures. She might well have emphasized that the former consists of a single injection of money, the latter of a flow of autonomous expenditures. Moreover, the Lange multiplier depends upon the existence of a liquidity preference function whereas her multiplier, as has already been observed, depends upon the absence of a liquidity preference function (or, what comes to the same thing, one with a zero elasticity with respect to the rate of interest) and is entirely unaffected by the values of α and β.

Time (other than historical time) did not enter into the relationships between the variables. It differed in form from the traditional demand and supply approach of partial analysis only in elaborateness and the qualitative empirical content with which Keynes endowed his concepts—the liquidity preference function was highly elastic; the marginal efficiency of capital was relatively inelastic; the marginal propensity to consume was less than unity, and fairly stable, and so on.

It should be manifest that Keynes's instantaneous multiplier was not the sum of a series but a pure relation deriving from the fundamental equation $Y = C + I$ and on the assumption that I is the autonomous variable. In a parallel manner Mrs. Lutz's multiplier derives from a similar fundamental equation (the definition of income per unit period) $Y = M - hY$ and on the assumption that M is the autonomous variable. This multiplier was, of course, always implicit in the Classical theory.

But for some purposes the relevant static multiplier does not furnish us with all the information we want. Though it indicates the position of the new equilibrium following a shift, say, in the autonomous variable, the actual time path traced by a dynamic multiplier may either take us closer toward or further from the new position of equilibrium. Much depends upon the magnitude of the empirical variables and their time relation to each other and to income, the resultant variable. It is Mrs. Lutz's achievement to demonstrate that a dynamic multiplier derived from strictly Classical postulates, though it has an oscillating character, necessarily tends toward an equilibrium as determined by the static multiplier.[1]

To sum up then, it is not the existence of a multiplier *per se* that provides a theory of income determination with greater explanatory value. A multiplier is nothing more than a quantitative indicator of the position of equilibrium consistent with any magnitude of the autonomous variable or—if dynamic—of the time path toward or away from it. In principle a multiplier is applicable to any ordinary partial analysis.

The existence of a multiplier, dynamic or otherwise, is not therefore the issue in any choice between two or more monetary theories. Whether the velocity hypothesis is as acceptable as, or more acceptable than, the Keynesian hypothesis can only be decided upon by the testing of their respective implications against what evidence can be sifted from the complex phenomena of economic events. And, it transpires, the familiar implications of the Classical, or velocity, postulates have been little altered by a proper formulation of a dynamic money multiplier, which is to say in effect that their chief implications are still incompatible with those of the Keynesian postulates. The Classical theory is committed to a stable velocity—without it there is no theory, only a tautology—while the Keynesian hypothesis though it ignores velocity implies an unstable and unpredictable velocity.[1]

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[1] Since M_H must be less than M, h is necessarily less than unity. As for the time relation assumed there is little choice. Income of any period has to be equal to the circulating money (M_T) of a preceding period less the net hoarding of that period.

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[1] Like many economic controversies this one, too, can be traced to ambiguous terminology. In the article quoted by Mrs. Lutz "Fiscal Policy and Income Determination" (*Quarterly Journal of Economics*, 1942), Samuelson comes out with the statement that the velocity hypothesis "is inconsistent with the multiplier hypothesis; both cannot be true; one at least must be wrong" (p. 602).

It is clear from a perusal of this article that when he spoke of the multiplier hypothesis he was addressing himself only to the familiar Kahn-Keynes multiplier while everywhere drawing conclusions based on the *Keynesian*—not the multiplier—hypothesis.

It is not known to me whether this or similar ambiguous statements started Mrs. Lutz's match-making activities in this field. What is evident, however, is that the multiplier she has conscientiously produced—one, as she claims, which is quite consistent with the velocity hypothesis—contradicts only the misconception of Samuelson's ambiguous statement. His treatment of the policy implications of the velocity hypothesis on the one hand and the Keynesian hypothesis on the other remains unaffected by her construction, correct though it is.

Packe on Mill

By LIONEL ROBBINS

I

It is an interesting circumstance that, although he died more than seventy-five years ago, there has been no full-length biography of John Stuart Mill until just recently. Until then the leading works were still the *Autobiography*, published by Helen Taylor immediately after his death in 1873, and Alexander Bain's *John Stuart Mill: a Criticism*, which was published in 1882: the *Life of John Stuart Mill* by W. L. Courtney published in 1888 in the " Great Writers Series ", is largely based on these and, although not negligible, is of very minor importance. Later on, in the nineties, two important series of letters were published—the letters to d'Eichtal[1] and Comte,[2] and in 1910 Hugh Elliot published a two-volume edition of other correspondence.[3] These added considerably to the volume of Mill's works available. None of them, however, threw much light on the more private side of his life; the papers bearing on this were closely guarded by the family, and although Elliot saw them, he was not permitted to use them. In 1922 and 1927, however, after the death of Mary Taylor, Mill's niece, they were put up to auction and acquired chiefly by Lord Keynes and the libraries of the London School of Economics and Yale. But it was not until much later that they were used extensively. Then, in 1951, Professor Hayek produced his important study of the relations between Mill and Harriet Taylor,[4] which was based directly on this material, at the same time marshalling in a masterly manner the relevant information which had accumulated incidentally in other biographical literature. At last, in 1954, Mr. St. John Packe published the full-length biography which is the subject of this notice.[5]

In his preface to this imposing volume Professor Hayek remarks " there may be details to be filled in here and there: but on the whole I feel that Mr. Packe has given us the definitive biography of Mill for which we have so long been waiting."

Coming as they do from one who has done more for our knowledge of Mill's life than anyone else this century, these words are very high praise; and even if we are not willing to go all the way with Professor

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[1] *John Stuart Mill, Correspondence inédite avec Gustav d'Eichtal*, ed. Eugène d'Eichtal, 1898.

[2] *Lettres Inédites de John Stuart Mill à Auguste Comte*, ed. Lévy-Bruhl, 1889.

[3] *The Letters of John Stuart Mill*, ed. Hugh Elliot.

[4] *John Stuart Mill and Harriet Taylor: Their Friendship and Subsequent Marriage*, by F. A. Hayek.

[5] *The Life of John Stuart Mill*, by Michael St. John Packe, with a Preface by Professor F. A. Hayek. London: Secker & Warburg, 1954, pp. xvi+567. 42*s*.

Hayek, we must certainly note the appearance of an important contribution. Mr. Packe has put an enormous amount of work into the book. He has worked through all the extensive material now available. And, inspired by real sympathy for his subject and admiration for the ideals for which Mill stood, he has succeeded in painting a full-length portrait which, whatever our reserves about details and execution, undoubtedly conveys an impression of life and authenticity. As will appear from what follows, I find a good deal in the presentation which jars ever so slightly—it has been consciousness of this quality and difficulty in getting it into a fair perspective which have largely been responsible for the inordinate delay in bringing this review to birth. But it would be ungenerous and, indeed, unjust not to pay tribute to a very considerable achievement made possible only by great industry and devotion.

II

Yet, for me at least, the reserves are quite extensive, and if only because of the very favourable reception which has generally been accorded to this book, I think it is right that they should be made explicit. They fall into three groups.

In the first place, while Mr. Packe has displayed towards his main figures a respect and a sympathetic understanding which are all that could be desired, it is to be noted that he has not shown the same attitude to important persons in the background. The general account of the Benthamite circle falls far below the level of the treatment of Mill and Harriet Taylor. It is true that in one place some tribute is rendered to Bentham's eminence as a legal reformer and that elsewhere, doubtless, phrases could be adduced which show some awareness of his importance. But for the most part the references are to quite a different sort of figure, a pseudo-Stracheyesque comic property giving light relief to the background of Mill's early days. Nor does James Mill fare very much better. It is probably true that he was intrinsically unsympathetic—although, as we can see from his correspondence with Ricardo, not nearly so grim outside the family circle as within. But he was one of the most important thinkers of the period and I doubt very much whether in his young days he made the impression of the somewhat circumspect go-getter of Mr. Packe's early pages. Grote, the most eminent Greek historian in this country at that period, takes his place in the semi-comic gallery, as being " sentenced " as the " conquered mate " of his wife " to the plodding lifelong labour of compiling a history of Greece, a work which she felt was needed, and well suited to his patient talents " (p. 68). As for Ricardo, I am very sorry to say that Mr. Packe has swallowed all the clever-clever mythology, hook, line and sinker. " All in all, Ricardo's hero was the capitalist " (p. 38) !

Secondly, in retailing the various events with which he deals, Mr. Packe all too frequently resorts to a method of presentation which makes it very difficult to distinguish fact from fiction. An easy example of what I have here in mind is furnished by the opening sentence of the chapter on the early relations between Mill and Carlyle :

> " 'It is a work of genius, dear,' sighed Jane Carlyle one day in 1831: the Man of Destiny growled ungratefully, stuffed into his pocket the biography of his first thirty-five years of life, and stumped out of the house."

The reference quoted—there is a reference on this occasion—is to Froude: *Carlyle, the First Forty Years*, vol. II, p. 161. Here indeed is the remark that *Sartor Resartus* was a work of genius. But of " the ungrateful growl ", the stuffing of the manuscript into the pocket and the stumping out of the house—not a word. One cannot but ask where did Mr. Packe find out ?

Such questions come thick and fast when we come to Mr. Packe's details of Mill's personal history. In the *Autobiography* the account of the famous mental crisis runs as follows:

> " It was in the autumn of 1826. I was in a dull state of nerves, such as everybody is occasionally liable to; unsusceptible to enjoyment or pleasurable excitement; one of those moods when what is pleasure at other times, becomes insipid or indifferent; the state, I should think, in which converts to Methodism usually are, when smitten by their first 'conviction of sin'. In this frame of mind it occurred to me to put the question directly to myself: 'Suppose that all your objects in life were realized; that all the changes in institutions and opinions which you are looking forward to, could be completely effected at this very instant : would this be a great joy and happiness to you ?' And an irrepressible self-consciousness distinctly answered, 'No !' At this my heart sank within me: the whole foundation on which my life was constructed fell down. All my happiness was to have been found in the continual pursuit of this end. The end had ceased to charm, and how could there ever again be any interest in the means ? I seemed to have nothing left to live for." (First edition, pp. 133–4).

And now Mr. Packe:

> " One evening in 1826 just as the year was dying John Mill looked up restlessly from the magic circle of his lamplit books. He was depressed. Away in the country the south wind trumpeted, driving before it close swathes of low damp cloud: the leaves fell sodden and heavy from the sweating trees, and stuck together. He was twenty. He felt old: his mental age already had the timelessness of the Sphinx; but he still did not feel independent, he felt cramped and incomplete. He had been busy enough these last five years, since he first read Bentham, ranting away with brittle zeal about the means of the betterment of the race. He had even felt a faint relish that the betterment of the race was not likely to be achieved in his lifetime, at any rate not in any final degree: for that gave him a guarantee of continued enthusiasm, a prospect of perpetual bridges to be forced, on a road bounded by a brightening but ever receding rainbow. He had been taught to seek his own happiness in the betterment of the race. The means of that betterment were never in doubt, they were before him all the time. So axiomatic had they seemed that he

> had gone on mechanically day by day pursuing them, without questioning that he was happy any more than he questioned that the aims were good. He had not had the time, nor yet, perhaps, the power, to stand outside himself and say, ' Exactly, now, what are you trying to do ? '
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> " But now, he was not happy, he was depressed. Some part of his system missed its beat. He got up, looked out of the window: in the London streets steam rose from the shining flanks of cart-horses towards the foggy roofs, and the muffled draymen blew on their chilly hands and shook the reins. The grey was giving way to black, and with the night came the long tunnel of the English winter, and endless darkness, oppressive, cheerless, raw. He drew the curtain.
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> " . . . He was alone.
>
> " That did not matter. He was used to that. Loneliness was a necessary symptom of greatness for anyone dedicated to noble aspirations. He turned back to his chair. He pictured again the anodyne, mankind perfected, intelligent, strong and free, and heard in answer to his gull's cry invocation, the insensate roar of the turbulent ocean of humanity. He put the question to himself again, more formally: ' Suppose that all your objects in life were realized: that all the changes in institutions and opinions which you are looking forward to, could be completely effected at this very instant: would this be a great joy and happiness to you ? ' To this direct question the rebellious fiend inside him which he preferred to call ' an irrepressible self-consciousness ', distinctly answered, ' No ! '
>
> " He was dumbfounded. ' At this my heart sank within me: the whole foundation on which my life was constructed fell down. All my happiness was to have been found in the continual pursuit of this end. The end had ceased to charm, and how could there ever again be any interest in the means ? I seemed to have nothing left to live for.' Soberly, he went to bed, to see what a good night's sleep would do." (Pp. 74, 77).

Now I have not Mr. Packe's familiarity with all the documents. He gives no reference for the unfamiliar constructions. But it is conceivable, I suppose, that somewhere there is allusion to the " shining flanks of the cart-horses " and the " long tunnel of the English winter ", etc., just as there may be a passage which justifies the statement elsewhere that " as the earth went thundering down upon [his wife's] coffin, it seemed to Mill as if he were being crushed " (p. 397). And I know that devices of this sort have been employed by authors who are deservedly respected. But for me the dilemma remains: *either* there is documentary evidence that, as Mill was drawing the curtain, " steam rose from the shining flanks of the cart-horses " and that as he heard the earth thundering etc. he felt as if he were being crushed —in which case it were better quoted than paraphrased—*or* there is not—in which case, however likely the reconstruction, it is not biography but fiction. Lytton Strachey may have done this sort of thing but Boswell did not. And, for serious biography, I submit, Boswell is the better model.

Thirdly, despite Professor Hayek's condonation, I think it is a deficiency, in any biography of Mill which aspires to be definitive, that there is so comparatively little said of the substance of his contribution to economics and philosophy. Mr. Packe may perhaps justly plead that this was no part of his intention—and when we read of Mill's attitude at fifteen that " *within the graphs* (my italics) of Political Economy " (there were no graphs to speak of at that time) " he saw swarthy, sweaty folk, laughing and loving, suffering and dying all to a tune of music unwritable and unknown " we may feel that this may have been just as well. But despite his love affair and his participation in journalism and politics, the interest of Mill's life is so preeminently the interest of an intellectual progress, that a narrative which deals only perfunctorily with the substance of his intellectual contribution, even if superficially it does not appear ill-proportioned, must lack definitive status. That is the ultimate ground for not going all the way with Professor Hayek. It may be agreed that it is most improbable that, in our day at least, anyone will be found who will think it worth while to re-read all the difficult material relating to biographical detail which Mr. Packe has investigated. But it remains true that he who wishes to get Mill and his spiritual pilgrimage into full perspective will have to look elsewhere as well—to Bain's terse and manly sketch, to the interesting studies of Professors Anschutz[1] and Britten,[2] to Miss Iris Muellen's[3] excellent recent monograph—and even then the picture will lack completeness. Recollecting the fine scholarship, the deep understanding and the admirable literary restraint of Professor Hayek's own contribution, it is difficult to repress a regret that it was not he who attempted the definitive life as well.

But when all this has been taken into account, let there be no mistake, our debt to Mr. Packe must still be very considerable. If he has not achieved a masterpiece without blemish, he has at least produced an interesting and valuable book. It is certainly safe to say that in future no one who wishes to write seriously about Mill can afford to neglect what he has done.

III

Mr. Packe's book abounds in new information. The collections at Yale, King's College, Cambridge, and the London School of Economics have yielded a rich harvest, which together with gatherings from other biographies published since Mill's death, put us in possession of what may well be felt to be more or less continuous knowledge of the main events of his life. Only the details of his career as an administrator remain comparatively obscure. I suspect that a scholar with the right combination of Indian history and political economy at his disposal could write a very instructive monograph on the Mills at the East India Company. Apart from this there does not seem much left to be investigated.

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[1] *The Philosophy of J. S. Mill*, by R. P. Anschutz (1953).

[2] *John Stuart Mill*, by Karl Britten (1953).

[3] *John Stuart Mill and French Thought*, by Iris Wessel Muellen (1956). Owing doubtless to its publication by an American university press whose books are not sold on a large scale in this country, this work does not seem to have attracted the notice it deserves. It is a most useful and scholarly elucidation of an aspect of Mill's thought which has great significance for the general history of ideas.

Of all this new information much the most important is that which relates to Mill's friendship and marriage with Harriet Taylor. There can be no doubt that the discovery of their correspondence was one of the great literary finds of the century—a revelation of a story of enduring human interest. What Mill and Harriet would have said of its publication scarcely bears thinking of. But this is no condemnation of those who published it. Time wipes out the entitlement to privacy; and although this may be a warning to the living to take every possible precaution to ensure that their really private letters are destroyed at death, it would be absurd to demand that scholars should not find out and publish as much as they can when a decent interval has elapsed. After a hundred years everything is fair game to the historian. We should all be thrilled to read Shakespeare's letters to the Dark Lady. Do not let us pretend that we do not find a similar, if diluted, interest in Mill's somewhat awkward and perhaps a little shy-making letters to Harriet Taylor.

On the actual progress of the relationship, I doubt if there is much which calls here for extensive comment. It is clear that John Taylor is the real hero of the triangle. But only a prig would pass adversely on the behaviour of the other parties. Indeed, perhaps the main interest of the episode, which after all starts from a very normal situation—a sensitive and unworldly young man enamoured of a lively young woman not very happily married to a man many years her senior—is the degree of consideration which all concerned showed for each other's feelings and the degree of restraint practised by the infatuated couple. It is disillusioning to find Mill behaving with what seems to be downright unkindness to his mother and family. But we do not know his explanation: and, in any case, let him who has never behaved badly to anyone in periods of great emotional stress, be the first to cast a stone.

Much more interesting is the light which is thrown upon the personality and intellectual status of Harriet Taylor. This has always seemed to me one of the most fascinating problems of literary history. There is Mill's own tribute in the *Autobiography* and elsewhere. There is Carlyle's denigration—and Carlyle was not always so bad a judge of character as he was of general morality. There is the scepticism of more neutral observers such as Grote, who thought that only a man of Mill's outstanding stature could survive such displays as the incredible memorial inscription at Avignon. How resolve such striking differences? How often have I sat gazing at the portrait of Harriet,[1] wondering what really lay behind those extraordinary Matisse eyes.

Here the correspondence does clear up at least some perplexities. After reading Harriet's letters, no one can deny that she had a mind of her own; and after reading Mill's, no one can deny the very considerable influence she exerted. I think it may be possible to exaggerate the part which she played in the general transition of Mill's mind towards what he called " socialism ".[1] It is clear from the much earlier correspondence with d'Eichtal, that some predisposition in that direction was latent already; and there is no reason to suppose that his negative reaction to the approval in certain quarters of the allegedly " anti-socialist " tendency of the argument of the first edition of the *Principles* would have been very different if Harriet had been dead. But there is no doubt of very considerable influence in the formulation of particular arguments—as evidenced, for instance, in the letter of the 16th February, 1849.[2] Similarly, I would not doubt for a moment the exercise of considerable influence in the planning of *On Liberty* and *The Subjection of Women*—though here the evidence is less direct. And, speaking generally, the correspondence testifies to a continuing marriage of minds in which Harriet's part can certainly never again be regarded as negligible.

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[1] It belongs to Professor Hayek and is reproduced facing p. 128 of his book.

But just how significant it was still seems to me to be something of a problem. Mr. Packe seems almost inclined to accept it at Mill's valuation without any reservation. " Except for the *Logic* the principles underlying the more important works of John Stuart Mill were defined, although not actually composed, by Harriet Taylor. And whatever in them cannot be ascribed to his lucid reasoning must be attributed to the sheer force of her personality " (p. 317).

I confess that this seems to me to go much too far. Mr. Packe says that " it is difficult to see why Mill who was so soberly and carefully exact in every other matter should be discredited in this ". Discredited is a strong word. But personally I do not find it at all difficult to see why Mill should not have been capable of exaggeration here. We know that his experience of women was not at all extensive. We know that he derived an emotional stimulus which it was probably impossible to exaggerate, from his association with Harriet. We know, too, that he applied terms almost as strong to the eulogy of Helen Taylor; yet it is inherently improbable that there should have been two women in his life whose intellect and conscience were more considerable and more original, to use his own standard of comparison, than his own.

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[1] It is perhaps not unimportant to stress how unlike the modern article Mill's mild stirrings towards what he called " socialism " actually were. In spite of the attempts which have sometimes been made to claim him as the spiritual ancestor of *Labour and the New Social Order*, it must be clear from any unprejudiced reading that, even at the point of maximum inclination in that direction, his approval was given only to a society based upon co-operative organizations of producers—duodecimo syndicalism rather than socialism in the modern sense. Any doubt concerning what he would have felt about far-reaching nationalization is surely resolved by the declaration in the *Liberty* that " if the roads, the railways, the banks, the insurance offices, the great joint-stock companies, the universities, and the public charities, were all of them branches of the government; if, in addition, the municipal corporations and local boards, with all that now devolves on them, became departments of the central administration; if the employés of all these different enterprises were appointed and paid by the government, and looked to the government for every rise in life; not all the freedom of the press and popular constitution of the legislature would make this or any other country free otherwise than in name. And the evil would be greater, the more efficiently and scientifically the administrative machinery was constructed—the more skilful the arrangements for obtaining the best qualified hands and heads with which to work it." (*Op. cit.* 1st ed., pp. 198–9). I have tried to deal with this issue at some length in my *Theory of Economic Policy in English Classical Political Economy*, chap. V.

[2] Hayek, *John Stuart Mill and Harriet Taylor*, pp. 136–7.

The fact is that there is little in what we know to be Harriet's unaided work which would really justify claims so far-reaching as this. The early essay on Tolerance, reprinted by Professor Hayek, is good but not so very good; plenty of essays as good as this must have been written by people who have never been claimed to be the intellectual equals of so outstanding a figure as Mill. The essay on the *Enfranchisement of Women*, in Vol. II of *Dissertations and Discussions*, which Mill goes out of his way to attribute mainly to her, is certainly not so distinguished as *The Subjection of Women* which we know she did not write. Nor do her intimate letters show that distinction of thought and style which would justify a rating anything like co-equal with her partner's; and one of them at least seems to show that she would not have disagreed with this verdict.

> " About the Essays, dear," she writes, " would not religion, the Utility of Religion, be one of the subjects you would have most to say on—there is to account for the existence nearly universal of some religion (superstition) by the instincts of fear, hope and mystery, etc., and throwing over all doctrines and theories, called religion, and devices for power, to show how religion and poetry fill the same want, the craving after higher objects, the consolation of suffering, the hope of heaven for the selfish, love of God for the tender and grateful—how all this must be superseded by morality deriving its power from sympathies and benevolence and its reward from the approbation of those we respect.
>
> " There, what a long-winded sentence, which you could say ten times as well in words half the length." (P. 369).

On this very difficult matter, it seems to me that Alexander Bain gets much nearer to what is probably the truth than Mr. Packe.

> " The more common way of representing Mrs. Mill's ascendancy," he says, " is to say that she imbibed all his views, and gave them back in her own form, by which he was flattered and pleased. This is merest conjecture: the authors of the surmise never saw Mill and his wife together: and, in all probability misconceived the whole situation. As I have just remarked, it was comparatively few of his ideas that she could render back in an intelligent form. But farther, it is not the true account of Mill to say that he was pleased by the simple giving back of his own thoughts. Of course, this would have been preferable to contradicting him at every point, or to gross misconception of his meaning. Judging from my own experience of him, I should say that what he liked was to have his own faculties set in motion, so as to evolve new thoughts and new aspects of old thoughts. This might be done better by intelligently controverting his views than by merely reproducing them in different language. And I have no doubt that his wife did operate upon him in this very form. But the ways of inducing him to exert his powers in talk,

> which was a standing pleasure of his life, cannot be summed up under either agreement or opposition. It supposed independent resources on the part of his fellow-talker, and a good mutual understanding as to the proper conditions of the problem at issue." (*John Stuart Mill: A Criticism*, p. 173.)

It is only fair to say that Mr. Packe alludes to this passage and says that " Bain came closest to the mark " (p. 316) in estimating the nature of Harriet's influence. But, with great respect, to say that she possessed " independent resources " and that there was " a good mutual understanding of the conditions of the problem at issue " and that for this reason she was able to set " his faculties . . . in motion ", is not the same as saying that she was responsible for the principles underlying all the important works except the *Logic*.

IV

It is perhaps useful to ask in what respects all the information which has come to light since the publication, shortly after Mill's death, of the *Autobiography* and Bain's sketch, really modifies the general impression of the man himself which emerges from these books and from a perusal of Mill's main works themselves.

In my judgment not much modification is involved by the publication of the love letters. We knew that Mill was infatuated; and as regards the partnership, as I have just indicated, Bain's verdict seems to me to be appropriate. In spite of their great intrinsic interest as evidence bearing on the problem of this relationship, the letters serve chiefly to vindicate this view against others. The actual substance of most of them does not seem very astonishing. It is a limited view of human nature to be surprised that, under the influence of passion, logicians and economists are capable of such words as " darling ", " adored one ", etc., etc. The intimate spectacle of Mill in love is just what might have been inferred from the *Autobiography*.

Much less expected, in my judgment, is the aspect which is revealed by the correspondence with Comte, well written up by Mr. Packe, whose habit of slightly guying characters with whom he is not in complete sympathy is not inappropriate in this connection. Here we are confronted with the spectacle of the frank, generous, utilitarian philosopher *vis-à-vis* as pathological an egocentric as ever strutted the stage in a Strindbergian madhouse. All the traditional paraphernalia of the *soi-disant* genius are there: the bland assumption of superiority over all predecessors and entitlement to unquestioning intellectual (and financial) support from followers, the world which is contemptibly impervious, the enemies who are constantly conspiring, the wife who does not understand, the mistress who does—and, for a time, poor Mill is completely taken in. He, whose mind was so infinitely more subtle and sensitive than this boring and arrogant system-monger's, humbly acknowledges intellectual indebtedness. Hearing that Comte is financially embarrassed, he offers a share of his own purse. He procures a subsidy from Grote and Molesworth; and when that comes to an end, has to put up with a terrific outburst of rage from the major prophet—" mon appréciation philosophique de l'ensemble de la conduite tenue envers moi dans un cas aussi décisif ". Only when the correspondence touches on what Comte calls " la question des femmes " does the ingenuous Mill begin to smell a rat; and only after extensive attempts at reason and persuasion—needless to say, wasted on a man who, on the ground that women's heads are smaller than men's, had legislated them forever out of the affairs of his revolting totalitarian Utopia—does he sadly conclude that it has all been rather a mistake, and, twenty years after, produces the most devastating critique of the Comtean system ever written. No wonder Harriet, with her much stronger hold on reality, seems to have felt a certain sense of embarrassment when she was shown the letters and let Mill know that she thought he had rather let himself down. " I am surprised in your letters to find your opinion undetermined where I had thought it made up—I am disappointed at a tone more than half apologetic with which you state your opinions.... This dry root of a man is not a worthy coadjutor; scarcely a worthy opponent " (p. 278). The whole episode has a peculiar pathos about it. If Mill's biography is the biography of the Saint of Rationalism, then this chapter must be headed, " *The Saint as Sap* ".

On the whole I do not think any substantial reappraisal is called for. Professor Hayek and Mr. Packe have added greatly to our knowledge and our enjoyment. But the picture which emerges, although much larger in scale, is not radically dissimilar to the picture which already existed. I think that Mill has been underrated as an economist, particularly perhaps in the oral tradition of the London School of Economics, myself a bad culprit at one stage. But this is a side issue and Professor Stigler has dealt with it very effectively in a recent number of this journal.[1] Speaking broadly, in the light of this recently discovered material, the impression jointly conveyed by Bain and the *Autobiography* seems to me to be about right. Not so original nor so well equilibrated as Hume, not so sure in judgment or literary skill as Smith, and lacking the profound analytical vision and genial personality of Ricardo, Mill yet stands out as one of the great figures of the Classical tradition, not unworthy to be mentioned in the same breath as these giants: a man of massive powers of intellectual synthesis and of burning idealism and integrity, willing to follow thought wherever it led him, somewhat over-solemn and not a very good judge of men but courageous, generous and sensitive—a rare spirit, conspicuous even in his own great age, with a message of candour and humanity which, as Mr. Packe so rightly emphasizes, has still much relevance for ours.

The London School of Economics.

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[1] " The Nature and Rôle of Originality in Scientific Progress ", *Economica*, vol. XXII, November 1955.

Book Reviews

An International Economy: Problems and Prospects. By GUNNAR MYRDAL. Routledge & Kegan Paul Ltd. 1956. xi + 381 pp. 37s. 6d.

The message of this book is that the inequality of wealth between the advanced countries of the West and the " underdeveloped " countries will endanger Western civilisation, failing supreme and sustained efforts on the whole economic and social front in the " underdeveloped " areas themselves, and enlightened policies in the advanced countries. We open with this oversimplified paraphrase of Mr. Myrdal's main thesis because the book is, first and foremost, an exhortation to the peoples of the free world to exert themselves to avoid disaster. The exhortation takes the form of a far-flung analysis of the economic, social, political and also moral forces at work in the advanced countries on the one hand, and the primary producers on the other. Mr. Myrdal's observation of these factors has convinced him that the present tendency is towards heightened national solidarity in the advanced countries, a decline in international solidarity, and economic stagnation leading towards political chaos in the economically backward countries. The greater part of his space is devoted to thoughts, facts and quotations designed to support this interpretation of current trends. The book also contains, however, positive proposals for practical policies and actions, both in advanced countries and in primitive ones, whereby the present ultimately disastrous course would be turned to a safe and prosperous one. Although primarily an economic study, Mr. Myrdal stresses that the correct appraisal and understanding of, for example, the causes of economic stagnation in a country like India requires that we take into our purview social traditions, political history and moral attitudes. Narrow economic analysis would exclude what, in his view, is one of the most fundamental requirements for economic progress—the sloughing off of " stale social traditions " which render the system economically inflexible. Like Professor Toynbee's fossilised civilisations, communities unable to make such adjustment are bound to fall out of the race.

A work with so large a scope as this inevitably raises difficulties of management. In the compass of some three hundred pages it is impossible to give a systematic analysis of the economic systems, problems and policies of the many industrial countries on the one hand and the many " underdeveloped " ones on the other, still more to deal at the necessary points with the related social, political and moral factors. When Mr. Myrdal writes (p. 300) " None of the data and few of the detailed inferences in this book are in any way original . . . I have sought not so much to increase detailed knowledge as to use existing knowledge to obtain a broader understanding," he is not quite fair to himself. As regards " inferences and ideas " the book contains much that is stimulating and new in emphasis and slant. Thus, for instance, Mr. Myrdal writes " Marx formed the opinion that the economic inequalities within every nation were bound to grow. . . . In the end the disparity would be so enormous that society would burst . . . it is a relevant and immensely important question whether Marx's prophecy, which has been proved wrong for the industrial nations, may not turn out to be an accurate forecast in regard to relations between nations. . . . The weight of the whole argument of this book is that to prove Marx wrong also in these international relations would require the growth of solidarity among nations on a vast scale " (pp. 323, 324). And again: " A disinterested social science has never existed and, for logical reasons, cannot exist " (p. 326). Or, to quote a minor aside: " I have often reflected over the lack of enlightened generosity that characterises intergovernmental bargaining and differs so widely from the way in which big business makes its deals " (p. 251). But it remains true that in the limited space of the twelve chapters devoted to National Integration, Western European Integration, International Payments, Labour Mobility, Capital Mobility, International Aid, and the Economic Effects of the Cold War, the writer is forced to rely rather largely upon his impressions, interpretations and conclusions, supported by some admirably clearly stated home truths, such as those contained in the following passages:—

> " I have much sympathy for the common feeling that at the bottom of the dollar problem has been the hard fact that we . . . have all been trying to maintain and improve standards of living and to invest in economic developments at rates which could not be supported by our own productive capacity " (p. 84). " As a social system competing for souls and political power, the Soviet contrast concept has its greatest potential following in the large poverty-stricken regions where the Western system is on weak foundations " (p. 145). " Serious damage to the integrity and therefore also the strength of our culture is being inflicted by [this] intellectual cowardice " (p. 304).

Writing of the " underdeveloped " countries he tells us:—

> " governments in these countries will have to check rises in consumption most severely in order to allow for investment in the growth of production " (p. 193). " The most hopeful forecast . . . would have to conclude that in the years immediately ahead foreign credits and aid will only to a small extent fill the real needs of the underdeveloped countries for capital for economic development " (p. 333). " However rapidly industrialisation proceeds the great masses of their working populations will for decades and, perhaps, generations be employed in agriculture and the levels of living of the rural masses will mainly be determined by their productivity there " (p. 227).

In the reviewer's opinion Mr. Myrdal has done a service by stating thus bluntly a number of unpleasant home truths. But the greatest contribution of the book surely lies in his last two chapters. Chapter XIII, unlike the earlier part of the book, does add quite materially to our scrappy stock of fundamental analysis of backward economies. One may still agree or disagree with the author's conclusions and interpretation, but his contribution is of value. Mr. Myrdal points out that the industrialisation of backward countries today takes place in very different conditions from those in which Western Europe and America industrialised. A conspicuous difference is the absence today of an international capital market which so greatly helped the earlier industrialisation. Another contrasting feature lies in the much higher rates of population increase prevailing today, aggravated by much reduced international mobility of labour. Today's " underdeveloped " countries have " a *per capita* income usually less than one-half . . . of what it was in most of the now advanced countries prior to their industrialisation " (p. 163). And when the " advanced countries industrialised they were in the fortunate situation of being surrounded by an underdeveloped world which they could use as a market for cheap manufactured goods and as a source of supply for food and industrial raw materials. This was one of the inestimable advantages of being ahead of the rest " (p. 257).

It is a great relief that Mr. Myrdal is not interested in paper solutions to abstract problems in an ideal world. He largely excludes from his discussion actions and policies which in his view have no practical prospect of being carried through by the nations concerned. Under this head comes, for example, an early and drastic liberalisation of trade by the United States of America, which Mr. Myrdal reckons is not a practical possibility. He also discounts the prospects for substantial capital investment by the advanced countries in the backward ones. His conclusion is that for this, as well as for other reasons, the only hope for the backward countries is to take the initiative in bringing about their own salvation. To this end they are asked to squeeze their consumption until it leaves a savings margin; to control stringently their foreign exchange resources; to break down those of their social codes which are damaging and to build up that national solidarity which is essential to all the foregoing. Finally, they are to turn to each other for mutual co-operation in the development of new manufacturing exports and to combine in persuading the advanced countries to adopt more liberal trade policies, while they themselves exercise careful protectionism. To justify this Mr. Myrdal goes out of his way to emphasise the different position of the " underdeveloped " countries. If countries are unequal, " equal treatment becomes inequality ".

Mr. Myrdal is at pains to make clear the value premise upon which his book is based. To the present reviewer one of his less acceptable ideas is that our ultimate aim should be *equality* of opportunity between countries—why not simply the greatest possible opportunities for all countries ? However, this is perhaps at bottom a difference of emphasis, and in any case this old controversy cannot be pursued here. Rather we would draw the reader's attention to Mr. Myrdal's closing chapter, in which he makes what we estimate as his second major contribution: a plain statement of the vital importance of independent critical moral judgment, exercised at all times by all individuals. In publishing his book, Mr. Myrdal is concerned to bring home to the people of all free countries the dangers they are in and to indicate possible ways of escaping from them. The high importance of the cause he is sponsoring makes one wish all the more that the stimulating ideas could have found their place in a less diffuse and a more systematic treatment of the main topics—although this would undoubtedly have meant some sacrifice in breadth. Meanwhile the book provides, as the author says, a pointer to a number of large research projects. Let us hope that it may also have some direct influence in promoting, alike among private individuals and Government authorities, greater vitality and more positive action to advance the causes for which Western civilisation stands.

H. MAKOWER.

Theoretical Welfare Economics. By J. DE V. GRAAFF. Cambridge University Press. 1957. x + 178 pp. 22s. 6d.

This brilliant essay on welfare theory has been published without any indication, except from the references, that it was written about seven years ago as a doctoral thesis. Although this seems open to criticism, it is true that the essay is remarkably " undated ". While the author, if he had not forsaken academic economics, might have liked to deal with some of the subsequent controversy, I doubt if he would have found it necessary to alter anything he has written in the light of such controversy. (One of the very few dated sentences is the following " a remarkable number [of professional economists] do really seem to believe that public enterprise or nationalised industries should base their price and production policies on the principle or rule that *marginal cost should equal price* ".)

The first six chapters, rather more than half the book, deal with the necessary conditions for a society to be on its welfare frontier, and with the ethical and factual assumptions required to validate the " marginal equivalences ". It is written at a highly abstract level, in terms of rates of social and private transformation and community indifference, with little or no descent to illustration or explanation of what this all means in terms of market conditions. It is written with a sure-footed mastery of the theory which is admirable, but is so cryptic that most people would need to know a lot about welfare theory to appreciate it. But the advanced student will probably find a number of things falling into place which hitherto have seemed unclear, or have been slurred over in the literature. In particular, I do not think that the problems of the definition of the group whose welfare is to be maximized, of the welfare horizon implied, of terminal capital equipment and optimal rates of investment, and of the value judgments involved in all this, have ever been so clearly dealt with before. Indeed it is here that the main contribution to the theory is made (aside from the definitive work on " optimal " tariffs which has already been published).

The remainder of the book follows the lines of the main theoretical controversies in the immediate post-war years—consumers' surplus, uncertainty, " optimum " tariffs, the marginal-cost rule for nationalized industry, and the valuation of the national income. The treatment is brief but often devastating. If the author thinks a single sentence is enough to overturn a position, he does not bother to say more. The theme of the book is destructive. But there is, perhaps, not very much that is now new in these chapters, although at a number of points he briefly anticipates what was in fact subsequent work (e.g., Kennedy's criticism of my " criterion ", pp. 89 and 161, McKenzie on the effect of multiple stages in production, p. 153).

Dr. Graaff is blandly astonished that, in view of the multiplicity of assumptions, many of them manifestly false, economists could have for so long been so pretentious about political economy. He is selective about the assumptions he finds most unrealistic. Perhaps the greatest emphasis is on external consumption effects, conventional (behaviouristic) utility theory not being otherwise explicitly attacked. But much emphasis is also placed on the distribution of wealth and the impossibility of moving along a welfare frontier, and on uncertainty.

The least satisfactory feature of the book is that the author shirks trying to answer the question of how much is left after all this destruction. I find it difficult to believe that he would want to say " nothing at all "—that costs and prices are no guide as to what should be produced. He very weakly concludes his chapter on public enterprise by suggesting a just price—one that " *is set with some regard for its effect on the distribution of wealth* as well as for its effect on the allocation of resources ". How does one have some regard for the allocation of resources ? Presumably with the help of welfare theory—

although the author gives no hint of *how* the theory can still be used—so the destruction has not been total. Moreover, given that the destruction is not total it is not absolutely clear why, with many other means of redistribution available, the distribution of wealth should get italicized in this particular context.

But to have attempted to be really judicial would have required a different kind of book. As it is, the book amply demonstrates that economics lost a pure theorist of the first rank when Dr. Graaff abandoned what I feel he regarded as a rather frivolous game.

I. M. D. Little.

Central Banking after Bagehot. By R. S. Sayers. Oxford University Press. 1957. 149 pp. 18s.

Miraculously, the Cassel Professor of Economics in London University, as well as keeping his *Modern Banking* up to date, writing his exhaustive and brilliant history of the Treasury at War, and editing this Journal, has managed to contribute to divers periodicals and to deliver to a dozen audiences as far apart as Glasgow, Zurich and Cairo, a series of reflections on the rationale and technique of Central Banking. These, to the number of half a score, are here brought together, to our great profit and enlightenment.

They cover a wide range. There is a learned ruckblick (number 2) to that pre-1914 half-century which Professor Sayers long ago made his own. There is a closely-reasoned discussion (blemished, as it seems to me, by one lapse of logic on p. 89) of the pros and cons of variable cash (or liquidity) ratios (7). There are wise words of counsel to those concerned with the setting up of central banks in under-developed countries (9); hot news of the latest complexities in the New York money market, and illuminating comment on the rival doctrines lately current in Federal Reserve circles with regard to the proper width of the field for open market operations (10). But in a brief review I must confine my attention to the series (3, 4, 8) in which Professor Sayers, nobly resisting any temptation to doctor or suppress, re-presents the pictures of the London scene which he drew successively in 1948, 1953 and late 1955.

To be candid, it still seems to me a bit odd that so shrewd and well-equipped an observer should have been so well content with what he saw in 1948. To him then the position which had been attained in the United States, with " bond markets held stable at low interest rates while there is always an adequate supply of banking funds available to meet the short term requirements of business " apparently seemed pretty well ideal. If England had floundered in her attempt to reach a similar haven, that might, he thought, be due to certain temperamental defects in the late skipper and certain technical obstacles which should be removable. But in the main, while some of us were uttering harsh words like " abdication ", Sayers could still bid us wholeheartedly marvel at the " smooth and confident technique of Bank of England control ".

By 1953 (number 4) several things had happened. The American bond-pegging policy had been shown up as unsound, and replaced by the famous " Accord " of 1951. In England, bank rate had been raised by two stages and the Bank's right to make it the effective rate for borrowing by the market re-asserted. A more critical Sayers was now pointing out that in fact it seemed to be very much a case of *plus ça change, plus c'est la même chose*,—suggesting that " if dearer money was right in the autumn of 1951, it must have been right in the more violent inflation of the autumn of 1950 ",—complaining of the " virtually complete absence of any authoritative explanation of what the authorities are trying to do ". But, no more than the rest of us, did he yet doubt the *power* of the Bank to " make the supply of cash whatever it chooses ".

Finally (8), in late 1955 we have, elicited for us by an Italian critic, a complete re-thinking and re-classification of the forces on which the volume of bank deposits in England now depends. This article must take its place in history as one panel of a notable triptych (the others appeared over the initials W. T. C. K. in *The Banker* and W. M. D. in *Lloyds Bank Review*, both for April, 1956) which has already greatly influenced thinking, and (one suspects) policy, in this whole field, and has at any rate set a number of us kicking our own shins. Since it is evident that the banks can always replenish their balances with the Bank of England by calling from the market or allowing their maturing bills to run off unreplaced, why exactly did we take it for granted that in a tussle between the banks and the Bank over the size of these balances the Bank can always win ? If, as the triptych teaches, that is not true, has it only ceased to be true since the unoffchokable Treasury displaced the offchokable trader as the predominant drawer of bills of exchange ? Or was it *never* so true as the Macmillan Committee assured us, with its categorical " the Bank of England is thus in a position . . . to exercise almost complete control over the amount of bankers' cash " (Report, p. 33) ? Re-reading Sayers's essay has set me puzzling over that passage in Keynes's *Treatise on Money* (vol. II, pp. 228–9) which I conceive to have been the basis of the Committee's pronouncement. But if I wait till I have understood that passage, this review will never be finished; so let me conclude it now with a public salute to the painters of that Liquid Assets triptych whereof one panel forms, as it seems to me, the most distinguished item in this very enjoyable exhibition.

D. H. Robertson.

Capital Formation and Economic Growth. The National Bureau Committee for Economic Research. Princeton University Press. Oxford University Press. 1955. xiii + 677 pp. 96s.

This volume contains a dozen papers presented in 1953 at a conference in New York on economic growth. It also contains the comments of a score of participants in the conference and brief rejoinders by the authors of some of the papers. Since no problem is so calculated to bring the social sciences together as economic development, the contributors include historians and sociologists as well as economists.

The volume opens inevitably (after a masterly introduction by Abramowitz) with Simon Kuznets analysing the historical record of capital formation in countries where such a record, however imperfect, exists. The most stimulating of his hypotheses relates to the determinants of saving, amongst which he includes the ratio of workers to dependants and the reproduction rates of various income classes. Then comes Raymond Goldsmith with a brand new kit of tools for analysing the evolution of the financial structure in advanced countries. As Ed Shaw points out in his comments, the upshot of

Goldsmith's analysis should be the reformulation of traditional monetary theory in broader terms as a study of market equilibrium for financial assets generally.

These two papers, which take up a quarter of the volume, are followed by two on the experience of the U.S.S.R., one by Grossman on the factors making for increased capital intensity in Soviet planning, and one by Holzman on the finance of Soviet development since 1928. Norman Kaplan, in an interesting comment, finds himself in disagreement with Grossman on the usefulness of measuring gross investment per additional worker and on the relevance of this ratio to the substitution of capital for labour. In another comment, Raymond Powell disputes Holzman's explanation of the change from rapid inflation in the thirties to deflation of prices since the post-war currency reform, arguing that budget surpluses were more important than direct wage controls.

The historians take the stage next with two papers by Hoselitz and Cochran on entrepreneurship and capital formation in France and Britain since 1700 and in America over the last century and a half. Both address themselves to the kind of question that economists ask and both are prepared to make bold generalisations about the factors governing entrepreneurial activity. Hoselitz draws a sharp contrast between the independence and enterprise of the individual British merchant and industrialist and the greater dependence in France on the state and the investment banks as agencies for minimising risks. Cochran, in an impressive sketch of American experience, comes to the conclusion that " growth depended more on where and how capital was invested than on the absolute quantity of voluntary savings "—a conclusion not easy to incorporate in neat mathematical models of economic expansion.

The two following papers by Henry Aubrey and Marion Levy relate to underdeveloped countries. The second of these I found rather tiresome. The more I read of the Japanese land reform under the Meiji, which Levy treats as highly exceptional, the less it seems to differ from the agricultural revolution in Western countries; and the more I read the anthropologists the more I find myself in agreement with Aubrey that the " sense of past neglect " which impels economists to give more weight to non-economic factors, is in danger of leading them to disregard their own field of investigation. Aubrey's own paper is an excellent example of the application of economic concepts to the apparently irrational investment preferences of capitalists in underdeveloped countries.

The concluding papers consist of a pair by Usher and Maclaurin on technical change, a long analysis of some theoretical issues by Adolph Lowe, a general review of the whole discussion by Walt Rostow, and some brief theoretical reflections by Abramowitz.

Usher's contribution bears mainly on the nature of technical change, the relationship between inventions and those acts of skill that are a normal consequence of the activities of engineers and technicians, the manner in which one invention leads to another or to a series of technical refinements and discoveries, and the diffusion of technical change throughout the world. Maclaurin concentrates on the part played by entrepreneurial skill and daring in innovation, which he distinguishes from invention. In both papers the impact of technical change on capital formation takes a quite subordinate place and the main issue is where and how technical change comes about.

This is a highly important problem that might well have been given more prominence elsewhere (e.g. in Grossman's paper on the U.S.S.R.); but, given the subject of the conference, it is natural to expect a fuller analysis of the interconnection between the pace of technical change, the rate of economic growth and the scale of capital investment. Hardly anything is said, for example, about the reaction of rapid growth on invention and innovation, or about the capital requirements of a continuous effort to devise technical change.

Lowe gets to grips with some of the problems of technical change but he follows the tradition of taking changes in technique for granted and analysing their consequences without going further back to examine their origins. His interest is centred on the problems introduced by immobility and specificity, the lags and frictions that prevent the structure of production from responding at once to changes in effective demand. While his treatment of the problem is extremely stimulating, I believe that his emphasis on the sector of the economy that produces machine tools is largely misplaced. Apart from the obvious possibility of importing machinery (including machine tools), the accumulation of capital is much more the result of building than of engineering activity, of the creation of structures rather than of plant. Machinery, the power that drives it and the equipment that makes it, may occupy a strategic position in economic development; but capital formation and the manufacture of machinery are two quite different things and the creation of new capacity is yet another. A new factory and a new dwelling house, for example, have different impacts on the labour market and their construction cannot be brought within exactly the same analysis; yet it is the dwelling house rather than the factory that is the typical bit of capital.

It is left to Rostow to suggest that what is needed is " to array the patterns of growth known to us in terms which permit systematic comparison ". The emphasis throughout the volume on international comparisons is in keeping with this suggestion. It is right, too, as Rostow and Lowe argue, that the aggregates in terms of which capital theory has so long been framed should be broken down by sector. Yet if we accept both contentions, what are we to make of the omission, throughout the volume, of any statistical analysis of the pattern of capital formation: the relative size of the major constituent items in different countries and at different times ? If we fix our attention constantly on the (at most) 25 per cent. that flows into manufacturing industry, and neglect the other 75 per cent. that goes into public utilities, housing, commerce, agriculture, etc., we cannot avoid getting a totally false picture of the role of capital formation in economic development and of the forces governing the demand for capital. If we do not know how the pattern of capital formation is changing and under what impulses, how can we frame reliable estimates of the trend of demand or judge how near we are to the abyss where capital requirements drop precipitately ?

One other omission deserves to be mentioned. The word " interest " does not appear in the subject-index. It does appear, here and there, in the text, like a forlorn echo from the past. But must we accept so readily the implication that interest rates are irrelevant ? Is there no place in the Brave New World of Goldsmith for a study of the evolution of the complex of interest rates as economic development proceeds ?

A. K. CAIRNCROSS.

The Psychology of Economics. By W. A. WEISSKOPF. Kegan, Paul & Routledge. 1955. viii + 266 pp. 25s.

In his Preface Dr. Weisskopf, who is Professor of Economics at Roosevelt College, Chicago, describes his work as aiming " to listen with a third ear to economists, to uncover what lies below the surface of their thoughts. . . . The hidden undercurrents rather than the truth-value and factual accuracy of economics are the subject of this book ". It is rather a mixed selection of objects that he has brought to the surface from these obscure levels, some of them undoubtedly useful and interesting, though hardly strikingly novel, and, among others, from deeper down, some Freudian bits and pieces which certainly seem peculiar and intriguing, though perhaps, to the non-Freudian, in part unconvincing and even unimportant.

In the opening sections we get a useful and comparatively " straight " account of the classical theory of value, correlating the emphasis on labour as the source of value with the Puritan ethic, somewhat after the manner of Max Weber (and, more recently Dr. Emil Kauder). Then, delving rather deeper on the subject of " Male and Female Symbolism ", Dr. Weisskopf gets, in turn, Ricardo, Malthus, Engels and Marx down on the couch, and some rather strange things transpire. Taking as his text Petty's remark about labour being the father and land the mother of value, Dr. Weisskopf argues that to Ricardo and Malthus the root of all economic evil was the excessive fecundity of the human female on the one hand, and the niggardliness of Mother Earth on the other, and that " the tendency to disparage land implies an unconscious tendency to disparage the female " (p. 128). On the other hand, labour stands for male sexual activity—(a point substantiated by a quotation from " a non-psychoanalytical philologist, H. Sperber of Upsala "). Thus, " it is the male principle on which their labour theory of value rests. It is quite consistent when Malthus and Ricardo, together with their disparagement of the female factor represented by land, elevate the male factor of labour to the sole creator of economic value. . . . It also conforms to a socio-cultural situation in which the patriarchal principle is predominant ". Subsequently Marx's analysis of exploitation, or of the cutting off of surplus value from the worker, emerges as a perfect exemplification of the Freudian castration theory. There follows a comparatively straight un-Freudian interpretation of Marshall's equilibrium analysis. Nor is the psycho-analytical method applied to any contemporary economic theories or theorists.

If one penetrates down " deep " enough it seems fairly obvious that what will be found " below the surface " of economists' thoughts will spring from the same sort of roots as what is below the surface of everybody else's thoughts—(c.f. W. H. Auden's lines to the effect that " Sophomores and peasants—Poets and their critics—Are the same in bed "). No doubt it is a question of intellectual taste, but what may seem of greater interest and importance for the economist than the psycho-analytical interpretations of, for example, labour (or other) theories of value, are the questions, much nearer—if still a bit below—the logical surface, as to why some economists have held a labour theory and other economists have held other theories of value, a question which, dredging around at his deeper levels, Dr. Weisskopf rather passes by. There is much that is interesting and provocative in this book, but, as one so often finds, what seems sound seems not so very profound,—and *vice versa.*

T. W. HUTCHISON.

25 *Economic Essays in Honour of Erik Lindahl.* Ekonomisk Tidskrift, Stockholm. 1956. 412 pp. Kr. 20.

The perfect mixed grill includes something to titillate every palate, and although the individual items may be insubstantial in isolation, taken together they should be well-balanced and satisfying. This collection of essays is nothing if not varied, and thus passes the first test adequately. On the other, however, it stands up less well. Nothing unifies the book, not even the interests of the man in whose honour it has been published; and this seems a pity, for the problems that Lindahl has treated are still important and still largely unsolved. An authoritative restatement of them, in symposium form, indicating the progress that has been made in clarifying them, would have been most welcome. Some of the contributors have indeed adopted this approach to some extent, but for the most part each ploughs a lonely furrow, with never a sideways glance at his fellows, and often with no more than a brief backward glance (just for the record ?) at Lindahl's own work.

If we cease bewailing what might have been, and look instead at the individual essays, as one would read a journal, then the impression obtained is much more favourable. For most readers, however, about half the book will be inaccessible, as thirteen of the essays are in one or other of the Scandinavian languages (indicated below by (S) after the author's name), and one short note by Schneider is in German. It is to be hoped that some of these will subsequently appear elsewhere in English. No more than the briefest indication of their scope can be given here.

On broad issues of methodology we have *Johan Åkerman* arguing in favour of the structural approach to the analysis of cumulative processes, rather than relying on simple aggregative models. *J. R. Hicks*. like Åkerman, is sceptical about the usefulness of *ex-ante/ex-post* sequence analysis, and from comparison of Keynesian and Swedish modes of thought concludes that the stock/flow distinctions of the former are likely to give better results, though not necessarily within the set of market simplifications that have so far been adopted. A third methodological essay is that by *Lindgren* (S), which explores the formal similarity between the analytical techniques used in the various branches of economics.

On the history of doctrine, *Landgren* (S) is concerned to establish Wicksell as the father of the first complete marginal productivity theory, while elsewhere *Gustav Åkerman* seeks to show that in one respect at least, namely when concerned with alternative agricultural products and the law of diminishing returns, the theory is still not fully worked out. In the field of monetary theory, *Dahmén* (S) enters a plea for a more historical approach in assessing the validity of older doctrine, while *Pipping* (S) works over another aspect of this subject in re-examining the crisis in Sweden's silver reserves in the early 1840's. *Vogt* (S), in the most curious contribution of all, tells of some of the unorthodox economic doctrines (and their prophets) that influenced him in his youth, and ends up by thanking Lindahl for saving him from Marxism !

Another group of articles deals with various specific problems in macro-theory. *Schneider* makes a further contribution to the balanced-budget multiplier controversy. *Turvey* tackles the related topic of the transactions demand for money, concluding tentatively that it is probably not a stable function of the level of national income. *Bentzel* (S) examines the conditions for the aggregation of production functions, and his findings reinforce Johan

Åkerman's conclusion that a dual approach is required, the inadequacies of simple macro-theory being offset by special investigations into problems that aggregation conceals. *Haavelmo* (S) emphasises the ambivalence of the Saving-Investment analysis, with the help of the formal mathematical distinction between an " equation " and an " identity ". In a characteristic essay, *Frisch* describes the work being done in Oslo on linear programming, in the course of which we learn, *inter alia*, the Norwegian word for a " small cute girl "! *Zeuthen* (S) puts in a few comforting words for the future of the human brain in what sometimes seems to be its unequal struggle against electronic devices. *Svennilson* writes on the accumulation of capital and the rate of economic growth, and *Olof Lindahl* reports the results of an investigation into the growth of gross domestic product in Sweden since 1861.

Inflation, of course, looms large in the subject-matter covered. *Hansen and Rehn* examine the " wage-drift " (i.e. the increase in wages that takes place between the annual agreements) in post-war Sweden, both statistically and analytically. *Welinder* (S) deals with the effects of inflation on the distribution of taxes, and *Silverstolpe* (S) explores, none too hopefully, the possibility of index-regulated rents for agricultural land. For a glimpse of more thoroughgoing inflations we can turn to *Kragh* (S) who examines the post-war experiences of Bolivia, Chile and Paraguay. Instability is also the theme of *Lundberg's* comparative study of the Australian and Swedish economies since the war, though here the greatest stress is laid upon the foreign trade balance. By contrast, *Johansson's* (S) analysis of housing construction as a general anti-cyclical weapon stands more aloof from our day-to-day worries, and he concludes that this particular sector of economic activity is not suitable for measures promoting short-run stability.

Finally there are three articles written from the administrative angle. *Kock* (S) reminds us of the limitations placed on official statistical investigations by lack of resources, and emphasises that it is the responsibility of economists to determine an order of priority for the information they require. *Dag Hammarskjöld* writes on the need for a truly international civil service that could work for national governments in underdeveloped areas. And, last, but by no means least, must be mentioned *Myrdal's* persuasive apologia for the research work of the E.C.E. Secretariat at Geneva.

It will indeed be a jaded palate that fails to find something here to whet the appetite.

ALAN WILLIAMS.

Money, Prices and Civilization in the Mediterranean World. By C. M. CIPOLLA. Princeton University Press. London: Oxford University Press. 1956. x + 75 pp. 20s.

This small book of large vistas deserves a wide circulation. Four of the five lectures discuss fundamental questions of medieval money, one of the central subjects of medieval history yet one of the barest tracts in the literature. At first glance (and usually long after) medieval moneys and exchange rates between them present a mass of figures so entangled that the student's usual reaction is a despairing retreat. But this is a world in which Professor Cipolla moves with a master's ease (and grace), and in a few pages the miracle appears: the chaos gives way to a logically ordered world. The monetary problems of the Middle Ages have suddenly become intelligible—and more, for they are revealed as worthy of study by the economist whose interest is exclusively modern. Particularly the problems of " international " currencies, which are problems of the relationship of two moneys used by the same people, are illumined by the multiple monetary structure of medieval trade.

The fifth lecture, entitled " Prices and Civilization ", is scarcely linked to the others. In it Professor Cipolla draws on his great knowledge of medieval prices to show how the kind of life people could live was limited by the very high relative costs of the traffic in goods and in ideas. Here it is a little surprising to find how extreme a view the author takes of the limits to trade. " For its basic daily needs," he says (p. 57), " any community had always to be as self-sufficient and self-sustaining as possible ". In a sense this is indisputable, but these are matters of degree, and the judgment hardly gives the reader the impression of a world in which quantities of corn, wool, timber, pitch, salt, herrings, cod and cloth, as well as the luxuries of the aristocracy, moved over long distances. In Europe north and west of the Alps this trade was vital to the maintenance of the populations; if Mediterranean people were more self-sufficing, it was through no impossibility of transport.

Nevertheless, few readers will fail to find both illumination and enjoyment in this fifth paper as well as in those four brilliant papers on medieval money.

R. S. SAYERS.

Dynamic Factors in Industrial Productivity. By SEYMOUR MELMAN. Basil Blackwell. Oxford. 1956. xiii + 238 pp. 22s. 6d.

Mr. Melman here presents the results on an important piece of research into labour productivity and makes an original and useful contribution to industrial economics. He is primarily concerned to discover the conditions that move managers to order the mechanisation of production. He starts by investigating the relation of technological changes to changes in the costs of alternative methods of production, chiefly in connection with the materials-handling operations of the motor and allied industries of the United Kingdom. He finds that during the post-war period a revolution has taken place in the way those operations are conducted. Machinery has been substituted for manual methods and as a consequence productivity has greatly advanced. He then addresses himself to the cause of the change, and he finds it chiefly in the rise in the cost of the manual operation compared with that of alternative mechanised methods. In other words, managements did not adopt these new methods because of any general and persistent preoccupation on their part with increased productivity, but simply because the rise in wages had altered the balance of cost advantage in favour of mechanisation. There were differences among firms in their " decision-making paths ", but a notable uniformity in their ultimate response.

Mr. Melman turns next to the question of the proportion of man-hours required for direct production and for administration respectively, and he provides some interesting figures to demonstrate the large increase in administrative overhead in recent years. This increase, he says, " limits the potential effect " of the rise in productivity brought about by mechanisation, and he therefore seeks to discover how the two changes are related. The author of Parkinson's Law will doubtless be delighted to learn that these detailed inquiries afford no support to " hypotheses which hold that the portion of man-hours used for managing are necessarily related to labour productivity levels ". Indeed, " the rates of increase of A/P (the ratio of administrative to directly productive personnel) and of productivity are controlled by separate dynamics ". The rise in administrative overhead is determined by the extension of decision-making and control on the part of industrial managements into fields that are not immediately related to productivity in the shop, fields such as marketing, negotiations with trade unions and government and public relations. Thus the area covered by industrial management has greatly increased partly because of changes in the social and economic environment, and partly because of the disposition of industrial bureaucrats " to select those methods whose introduction would . . . enhance their own importance ". In England the rise in administrative overhead has recently been more rapid than in the United States.

The implications of these findings for industrial policy are suggested in stimulating detail. For instance, if one accepts the conclusion that managements normally introduce innovations in methods only when driven to do so by changes in relative costs, and if it is also agreed that the tendency for the cost of manual processes to rise faster than that of mechanised processes is likely to persist, this should influence " production engineers in the design of industrial facilities ". " The effect of using *future* labour cost with *current* machinery prices would result in the selection of equipment appropriate to a higher than current alternative cost ratio. Since that would mean a preference for more mechanised, more automatic, equipment, the effect would be to accelerate the rate of productivity increase." This might be held to justify a dictum once heard in business circles that the progressive firms are run by engineers and the unprogressive by accountants, since the latter are supposed to base their decisions on *current* costs which the former neglect ! There is much in this book to provoke controversy. It is odd that in all the detailed discussion of the costs of alternative methods of production, and especially of the causes and consequences of the substitution of machinery for manual labour, there is no reference to the effect of the rate of interest on the cost comparisons.

G. C. ALLEN.

Plant Location in Theory and Practise. By MELVIN L. GREENHUT. The University of North Carolina Press ; Oxford University Press. 1956. xiii + 338 pp. 30s.

The economic factors determining location of plants are costs and demand. In the early writings on the theory of location, those of Von Thünen and Weber, the factor of demand was virtually neglected; the least-cost location was identified with the optimum location, and the theoretical models were constructed so as to emphasise this principle. In the later development of the theory, connected primarily with the name of Hotelling, the stress was on demand; the firms were supposed to choose locations with the most favourable market areas; and the possible advantages or disadvantages in costs were regarded as of secondary importance. Professor Greenhut's book attempts a critical examination of those theories, their integration into a general theory in which due weight would be given to both costs and demand, and confrontation of the theory with the facts.

The first part of the book contains a survey of the development of the theory of location from its origins to the present day. Von Thünen, Weber, Hoover, Hotelling, Lösch and Smithies are the principal authors mentioned.

This is followed by a detailed analysis of all factors which affect location. Transport costs, differences in processing costs, the demand factor, the advantages and disadvantages of industrial agglomeration and, finally, personal considerations are examined one by one and their effects on location ascertained with reference to various hypothetical forms of the market and of competition. The third part gives us the results of an empirical study of the actual motives which led certain selected firms in Alabama to choose their locations. Eight firms were investigated and the results bring into focus the importance of personal considerations. As the firms chosen were very small, this is probably what might have been expected. The book ends with an attempt at a comprehensive theory of location which would take into account all the relevant factors. It follows the same line as Chamberlin's analysis of monopolistic competition; firms are expected to appear wherever there is an opportunity to earn profits, and ultimately they become so numerous that all profits are competed away. The formulation of the theory is in such general terms that it is difficult to regard it as an accomplished contribution. After a highly abstract and technical analysis of the theories of the predecessors, it comes as an anti-climax.

The arrangement of the material is not always fortunate. Some topics are discussed several times, and there are whole paragraphs repeated word by word, including their footnotes. There are also one or two technical mistakes. In Fig. 1, for instance, it is not elasticity but the slope of the curve that seems to be relevant. And in Appendix II Professor Greenhut arrives at a very puzzling conclusion that a spatial monopolist may find it profitable to operate in an inelastic portion of his demand schedule; this, however, is only by assuming a term to be positive which a few lines before was made equal to zero, or by assuming the costs of transport to be higher for smaller quantities than for greater quantities of the same good.

In spite of these minor and purely technical shortcomings, the argument is always clear and the book may be recommended to all students of the subject. The title " . . . in Theory and Practise " is perhaps a little too ambitious because it is difficult to make any generalisations about practice on the grounds of the behaviour of eight small firms in Alabama; but, none the less, the study is interesting, and the theoretical parts of the book have been written with competence and much skill in exposition.

S. A. OZGA.

The Organisation of Science in England. By D. S. L. CARDWELL. William Heinemann Ltd. 1957. ix + 204 pp. 18s.

The contents of this interesting book, which is one of a series on sociology, bear little relation to its title or to sociology. The major and essential part of the book traces the history of the provision made in England for the education of scientists, engineers, technologists and technicians between the years 1800 and 1918. It is a fully documented and fascinating story for anyone interested in the very close relation between educational problems and the application of science to industry. The pattern of progress in the nineteenth century, although differing in detail, is repeated in the contemporary problems of technological education, scientific development and industrial progress today.

Mr. Cardwell reviews in detail the recurrent crises of agonizing reappraisal to which the state of education and the lack of science in industry were subjected, the decisive effect on public opinion of the Exhibition of 1851, the Paris Exhibition of 1867 and the German capture of the dyestuffs industry in the latter half of the century, the isolated efforts of enlightened industrialists, the important contributions of the Royal Engineer officers who were almost the only professionally trained engineers in the country a hundred years ago, the indefatigable efforts of the leading professors like Lyon Playfair and Huxley to persuade the authorities of their responsibilities and finally the succession of Royal Commissions and Committees which slowly, far too slowly, extracted funds from Parliament for educating scientists. The contribution of the older Universities especially of the Cambridge Triposes, the growing importance of technical colleges and Redbrick Universities, the slow genesis of what is now the Imperial College, the relative value of examinations and research experience as educational tools, the increasing influence of professional societies and, above all, the struggling growth of the *profession of teaching science* are admirably brought out. The main theme is that, under public pressure, Government policy and expenditure has slowly expanded the output of the schools and colleges thereby creating an army of professionally trained scientists which, in the first place, has found its livelihood as teachers, lecturers and professors and subsequently, especially in the last 40 years, has almost satisfied in addition the ever growing demands of industry and government. On this " professional society " depends the success of the second industrial revolution.

W. L. FRANCIS.

The Rise of the National Trade Union. By L. ULMAN. Harvard University Press, Oxford University Press. 1955. 639 pp. £3. 16s. 0d.

During the past hundred years trade unions in Britain and America have grown from small local associations to vast national organisations. The evolution of the trade unions in Britain was traced by the Webbs in their famous studies published more than sixty years ago. Now that Professor Ulman has published the results of his massive research into the rise of the national trade union in America, new light has been thrown on the development of trade union organisation and patterns of behaviour in both countries.

The evolution of trade union organisation in every country has naturally been influenced by geographic, social and economic factors. The immense distances between centres of population in America made a high degree of local autonomy a necessary condition of national organisation. Thus central control did not develop to the same extent as in Britain. In America collective bargaining had to be carried out on a local basis for the same reason, and because economic and social conditions varied so greatly from area to area. The typical wage agreement in America is still negotiated between the ' local ' union and a single employer, though there have been signs in recent years of a slight trend towards industry-wide agreements. In Britain the growth of national trade unions was accompanied by the development of national bargaining, and the industry-wide agreement is now the dominating feature of the British system of wage fixing.

Only in one respect have American unions grown more centralised in their government and administration than British unions. They permit their chief officer to exercise wider functions and to enjoy far greater power than would be allowed by any British union. The principal officer of an American union is the president, whereas in a British union it is the general secretary. The difference is important since the American trade unionist has followed the pattern established by the nation as a whole. Professor Ulman shows that it was not simply because the trade unions desired to imitate the system of national government that they elevated the office of president into one of great power; the conditions under which national unions were developed made strong leadership, focussed on the main officer, an essential complement to decentralised authority in other respects. Paradoxically, however, in contradistinction to most British unions, the American unions have adopted a parliamentary system of government insofar as they normally elect their president and executive board at their annual conventions. Most British unions have adopted the system of direct election for their senior officers and executives.

Professor Ulman's book is not easy reading. The text is over-weighted with detailed evidence on some questions and is rather under-weighted on others. However, this book is an important contribution to our understanding of the way in which environmental factors have shaped the development of trade unions and of the institutional reactions which in turn have influenced subsequent social and economic developments.

B. C. ROBERTS.

The Supply of Capital Funds for Industrial Development in Europe: *Resources*; *Structure*; *Methods*. O.E.E.C. Paris. 1957. 235 pp. 12s.

This general report summarizes and comments on ten national reports giving details of the mechanism for the supply of capital to industry in nine countries of Western Europe and in the United States of America. The collection and comparison of the statistical material—imperfect though much of it is—and the discussions of the very different institutional arrangements in these countries are valuable in themselves. They should lead to some questioning of practices accepted as traditional yet apparently more suited to the industrial structure of the nineteenth century than to that of 1950.

It is refreshing to find some criticism of the obstacles placed in the way of an expansion of industrial investment by the jealous greed of Treasuries—our modern Shylocks—seeking to squeeze out for themselves the last drop of investible funds at the lowest possible cost. In one country savings are " guided " into savings banks by keeping down the rate which commercial banks can pay on deposit accounts to an absurdly low level, and then " guided " into government securities on the grounds that the safety of the deposits would be endangered if any of them were to be employed in industrial finance. In others dividend limitation or discriminatory taxation of dividends is used to prevent companies from issuing ordinary shares, while tax exemption privileges ensure that government bonds crowd industrial bonds out of the market. Obsolete legislation as to the range of investments permitted for insurance companies (Germany), pension funds, and other trusts (Britain) survives largely because the Treasuries insist on retaining their monopolistic privileges over these sources of funds.

Another pertinent comment is on the need for the development of more intermediary financial institutions through which personal savings can flow into industrial investment. It is well worth stressing that various sorts of investment trust, financial company, *banque d'affaires* and industrial finance corporation have an important part to play in a period when there are many small and medium-size personal savers. That the unit trust in its modern American form is much superior to the managed investment trust, as the authors of this survey conclude, does not seem, however, to be established by the evidence.

It is to be hoped that the advocates of a drastic capital gains tax will study the conclusion of this report that " to encourage the supply of risk capital an obvious condition is the restoration of the essential attraction of equity investment. . . . Taxation of the adjustment of equity values to the changed purchasing power removes the principal incentive to risk-bearing investment ". It is also salutary to be reminded that self-financing can be a wasteful process and that the approbation with which it is regarded in England is thought to be excessive by several qualified Continental observers.

Certain passages in this volume are obscure, such as the explanation of the poor market for the shares of small companies in Britain (p. 89), and others are open to criticism. It seems peculiar, for instance, to say that " old ordinary shareholders were rather handsomely treated by their companies " because they were given priority in applying for new issues, whatever the terms of these issues may have been (p. 95). That the Macmillan Gap was " invented or discovered in 1932 " must surprise anyone familiar with Lavington's standard work, *The English Capital Market*, published eleven years before. These criticisms, however, are of minor points; the book as a whole is warmly to be welcomed.

R. F. HENDERSON.

British Incomes and Savings. By H. F. LYDALL. Institute of Statistics, monograph No. 5. Oxford, Basil Blackwell, 1955. xvi + 273 pp. 32s. 6d.

It always surprises me that consistent and reasonable replies are given to complete strangers who ask very personal questions such as those discussed in this book about the ownership of assets, income and the rate of saving. In the aggregate the answers appear not to give a true picture of the position, either because those with assets tend to respond less frequently than those without or because respondents are more prone to understate than overstate their resources. Thus estimates of national holdings built up from this survey account for only about one-third of building society deposits and shares, one half of savings bank deposits and co-operative society shares and three-quarters of savings certificates and defence bonds. It seems unreasonable to explain all the deficiencies by reference to holdings outside the population surveyed.

After local experiment this survey was carried out in 1952 with co-operation from the Social Survey and finance from the Nuffield Foundation. The sample was chosen from a stratified list of administrative areas with a provision that larger houses, that is those with rateable value of £30 or over, had five times the chance of selection of others. The response was from about 75 per cent. of the sample, but varying in regions and according to the size of the town or house. To obtain national results it was assumed that for each section the non-respondents were comparable to those who did reply. A 75 per cent. response, especially when those living in larger houses were overweighted, seems very good for this type of survey. There was also evidence that the non-respondents did not differ significantly from the respondents in qualities that could be tested against the population census, such as occupation and age.

An idea of the work can best be given by describing some of the results. In the spring of 1952 over half the " income-units " surveyed thought they were worse off than a year before, and only one-fifth thought themselves better-off; it was only amongst the young that as many as 47 per cent. thought themselves better off. 50 per cent. of all said they had less than £20 in liquid assets and 20 per cent. had £200 or over. The proportion with some liquid assets remained constant at just over 70 per cent. for those in age groups 25 to 64, but the average amount of such assets was much greater for those over than for those under 45 years old. The 4 per cent. of income units with £1,000 or over owned 32 per cent. of total liquid assets, 38 per cent. of such assets in building societies and 54 per cent. of those deposited with joint stock banks. 5 per cent. said they owned stocks or shares, including over 50 per cent. of those with incomes of £1,500 a year or over. Less than half of the 5 per cent. had dealt in shares in the past year.

On the survey definitions used the contractual savings made in the year for life insurance, employees' contributions towards superannuation and repayments of mortgages were almost exactly balanced by a decline in liquid assets in the year before the survey. This is a surprising result even after allowance is made for the fact that windfalls received and retained are not included in savings and we are warned not to take too much notice of this figure as other evidence does not suggest there was such a great decline that year in personal liquid assets. One feature of the survey is that it shows, for all income ranges in which the information was analysed, that the amount of saving was positively correlated with income.

A very valuable chapter in the book gives distribution of income on a household rather than on a personal basis. The personal basis includes in the low income group young earners, apprentices, part-time workers and others who have no direct household responsibilities. Often in these cases the income does not give an adequate picture of the standard of living, so that new figures are especially welcomed. As one example, direct taxation in this country is usually assumed to be progressive but many statistics do not show it so for the mass of incomes. From this book we note that 24 per cent. of the " income units " had under £200 a year whilst 51 per cent. had from £200 to £500; yet we note that the rate of direct taxation averaged 7·1 per cent. between £200 and £300 and 6.9 per cent. between £400 and £500, an absence of progression presumably associated with the changing character of the income unit. When divided on a household basis, 21 per cent. of the households had incomes less than £300 a year and 48 per cent. had from £300 to £600. Here the progression is shown with average rates at 5·4 per cent. between £300 and £400 and 7·0 per cent. between £500 and £600, though even here the character of the household was changing somewhat with income.

H. S. Booker.

Input–Output Analysis: *An Appraisal.* Studies in Income and Wealth, Vol. XVIII, by the Conference on Research in Income and Wealth. National Bureau of Economic Research. Princeton University Press, 1955. London: Cumberlege. x + 321 pp. 60*s.*

This volume of eight papers is a useful, if somewhat prolix, examination of the virtues and defects of input-output analysis. Its aim is to acquaint non-specialists with the latest developments in the technique. The first paper is by Leontief, who sketches proposed solutions to some of the basic problems. Evans's and Hoffenberg's essay is the most exhaustive, covering the theoretical framework, statistical implementation, and uses of the technique. The papers by Christ, Norton and Moore give good, selective, appraisals. Sigel and Leibling go into a detailed discussion of social accounting, which is likely to be less interesting to non-specialists. The volume ends with Gosfield's application of the technique to Puerto Rico. This is supposed to be an example of its use in an underdeveloped country, but Puerto Rico's statistical system does not fall in the underdeveloped category, so that many of the problems which arise, for example, in input-output work in Ghana and Tanganyika are not discussed.

The major virtues and defects of the technique are scattered through the volume, and it might be useful to indicate here where the fullest treatment of each is to be found. The discussion is almost entirely in terms of static models with exogenously determined final demand. It is mainly rooted, in fact, in the 1947 tables for the American economy.

Among the virtues, one that is hardly disputed, even by Friedman in his comment, is that input-output tables provide an interesting and succinct summary of the inter-relations in an economy in some past year. It is the prognosticating aspect of the technique which sharply divides opinion. Leontief claims this aspect bring economics nearer the procedure of the physical sciences, for the input-output model yields detailed quantified predictions (conditional in the open model), which can be tested. Further, the model is general and will not omit repercussions in sectors remote from that under special scrutiny.

It is not difficult for the critics to find many chinks in the technique's armour, though most are given some sort of answer in the volume. To begin with, the predictive aspect is criticised in that no really satisfactory tests have been made; Christ shows that some conditional predictions made in the U.S. have yielded no better results than simpler methods. The well-known criticism that input proportions are invariant to changes in scale, in technological processes and in factor prices, is dealt with by most of the writers. There is a twofold defence. Leontief and Evans and Hoffenberg consider that linear production functions are reasonably realistic. Moore, besides telling us how non-homogeneity in the functions can be taken into account, explains what methods are available, with their limitations, for incorporating variable input coefficients. Christ emphasises another weakness: the lack of any reference to maximising behaviour. As we have seen, the firm does not adapt by changing input proportions; on the consumers' side, alternative conditional predictions may be made with different " bills of final demand ", but nothing is said about the " most preferred " pattern. Next, the technique cannot deal adequately with multi-product firms, though some allowance was made in the 1947 tables, which is described by Moore. Finally, the 1947 tables did not take into account capital inputs or purely monetary relations. The problems involved in the former are mentioned by Leontief; work proceeding on the latter—analysis of money flows and its incorporation into input-output tables—is discussed by Sigel.

The enthusiasts put the need for more statistical work well in front of the solution of theoretical problems as the primary objective. This emphasises that the ultimate question about input-output analysis is itself economic. Most would agree that explorations in the technique should continue if possible, but it remains to be seen whether the truly enormous cost of quite modest tables is justified.

DOUGLAS DOSSER.

A Dictionary of Statistical Terms. By MAURICE G. KENDALL and WILLIAM R. BUCKLAND. Published for the International Statistical Institute by Oliver & Boyd: Edinburgh and London. 1957. ix + 493 pp. 25s.

This is a useful book. It is rather more than a simple compilation of technical terms invented by various statisticians. There is, in nearly every case, a real attempt to give sufficient discussion, beyond mere definition, to enable the interested reader to gain some idea of the concepts underlying the formal phrases. Where alternative names for the same concept exist the authors have not hesitated to state which they regard as preferable. While it is not necessary to agree with the authors in every case, it is good that they should give some lead to those wishing to discriminate between alternatives, many of which owe their existence to nothing more than some statistician's ego. Cross-references are provided on an amply adequate scale.

The book can be recommended to practising statisticians as a reference book and as a source of information on those terms with which their training has not made them familiar. The scope of the dictionary is so wide that almost any reader will find in it something as yet unknown to him. In the reviewer's own case, " high-low graph ", " Nyquist interval ", " open-ended question " and " Sturge's Rule " are but a few examples of pre-Dictionary ignorance. For students, however, the Dictionary may be of mixed value. Whilst it provides a handy source of references, there is a danger that the set of cut-and-dried definitions may become a substitute for a real understanding of the subject. This danger is particularly acute in the case of a student working on his own, who may not realise that some fifty per cent. of the terms included in the Dictionary are not in common use, at any rate among British statisticians. In this connection it may be noted that in their preface the authors emphasize that they do not intend the Dictionary to become an inflexible international standard, although they recognize the possibility of this happening.

As was stated at the beginning of this review, the discussion of the various terms is usually adequate to convey a reasonably clear idea of their meaning. There are a few cases which do not come up to this desirable standard. The entry on Combinatorial Tests assumes a prior knowledge of Combinatorial Analysis; Complex Tables could well be Multiple Cross-classification (Cross-classification and Hierarchal Classification do not appear at all); and the description of Power of a test is misleading in that Power is defined as " the probability that it (the test) rejects the alternative hypothesis when that *alternative* is false ". The contents might be more helpful if they were arranged under a few general headings, e.g., Moments, Analysis of Variance, Index Numbers, etc., though we might not then have a Dictionary in the usual sense of the term.

The last 173 pages of the book contain glossaries giving the equivalents in French, German, Italian, Spanish and English of some fourteen hundred statistical terms. While it is to be hoped that the Dictionary itself will not act as a fossilizing influence on the definitions used in statistical theory, it would be very convenient were the equivalents listed therein to become generally accepted, at any rate for the next few years.

There are a few minor misprints, of which the statement that " probit esperado" is the Spanish equivalent for "expected loss" seems the most serious.

The price of the book is remarkably low, considering its size and quality. It should be an attractive purchase for any persons interested in historical and current developments in statistical theory.

N. L. JOHNSON.

The Lognormal Distribution with Special Reference to its Uses in Economics. By J. AITCHISON and J. A. C. BROWN (University of Cambridge Department of Applied Economics Monographs, 5). Cambridge University Press, 1957. xviii + 176 pp. 35s.

By what are known as the Central Limit theorems of the theory of probability, the sum of a large number of random variables tends, under general conditions, to be distributed in the " normal " form. If we consider a new set of variables, of which the first set were the (natural) logarithms, it follows that the *product* of the new set of variables will tend to be distributed in the so-called " lognormal " form. It is from this fact that the lognormal distribution derives a good deal of its generality and importance, and it is this transformation of an additive to a multiplicative process which gives rise to the " law of proportional effect " which has been discussed in relation to diverse economic distributions.

It is a sign of our statistical times that a monograph should be devoted to a single family of distributions, however important. The authors have made an admirably comprehensive review of the history, theory and applications of the lognormal distributions. Some interesting non-economic applications are discussed, but two whole chapters are spent on applications to the distribution of incomes and to the analysis of consumers' behaviour. Most of the rest of the book is concerned with theoretical and computational problems, some of which require considerable mathematical and statistical background for their full appreciation.

Despite its concentration on a narrow field, the book avoids monotony, the discussion ranging from the history of early controversy to the programming of an electronic computer for sampling experiments. Essentially, however, this is a work of reference, which will certainly be invaluable for anyone wishing to fit a lognormal distribution to observed frequencies.

ALAN STUART.

Les fondements comptables de la Macro-Economique. Les équations comptables entre quantités globales et leurs applications. By M. ALLAIS. Presses Universitaires de France, Paris. 1954. 91 pp. Fr. 900.

In spite of his macro-economic approach, M. Allais is not Keynesian, and some of the most illuminating parts of his book are to be found in two footnotes, pages 68 and 70, where Keynes is considered as a man of remarkable intuition, but one whose lack of logic and insufficient power of deduction prevented him from solving the problems he discovered through his keen intuition. Retrospectively, it will be found—according to M. Allais—that economic theory has been misled into a blind alley by Keynes. But apart from this short and devastating attack which leaves the reader in no doubt as to the author's theoretical position, the book is devoted to working out fundamental macro-economic equations which define the relations existing between different global quantities. No less than 35 symbols and 28 fundamental equations are set out in the first three summary pages, and 336 in the whole of the book. The text itself is rather short, and the author is aware of this fact as he warns his readers of the difficulty they may have in following the acrobatic interplay of his equations. But, above all, M. Allais intends to be as clear as he is concise in defining all the variables and concepts he uses. A good example of confusion, he says, is found in the equation $I = S$, and in the subsequent literature which arose from it (p. 7, and pp. 68–71). The Keynesian definition of savings does not permit that I be equal to S as is often assumed. M. Allais is confident that he can settle " quickly, definitely, and very clearly (*en toute clarté*) " the relationship between I and S: " Investment is not equal to spontaneous saving, but is equal to spontaneous saving plus non-distributed income of enterprises, the latter being equal to the excess of auto-investment over the increase of personal liquid balances " (p. 69).

The book is divided into two parts: the first one deals with the relations between global quantities on the general assumption of a closed economy, so that the model is simplified. In the first stage the model economy is assumed to work without the existence of the state, and in the second stage the model is enlarged to bring in state activities. Then, in the second part of the book, the author applies his defined set of relations to the study of some economic problems such as the liaison between savings and investment (mentioned above), between capital and income; the analysis of the role of money and credit in the economic mechanism; the significance of the quantities used in national income accounting and the nature of their relations; and so on.

M. Allais emphasises that his efforts aim at giving the economist nothing more than a useful working tool, and this is the best and shortest definition of what can be found in this book. Whether or not it is easy to use this tool may be open to argument; I am sure it will take some time for the reader to become very familiar with M. Allais' equations, but the effort required is certainly worthwhile.

MAURICE NIVEAU.

The Social Accounts of the Welsh Economy, 1948 to 1952. Edited by E. NEVIN. The University of Wales Press. 1956. xiv + 17 pp. 3s. 6d.

The Welsh Economic Research Group have displayed much ingenuity in completing their ambitious task on a general basis of C.S.O. definitions. The value of this and similar regional calculations depends largely on the extent to which inadequate statistical material can be made to provide estimates with tolerable margins of error. The writers classify in detail the " possible error " to be attached to each item: in most cases—some important residuals are notable exceptions—the possible errors are put at 2–4 per cent. or 5–6 per cent. In 1952 the possible error appears to be about 5 per cent.

for a G.N.P. of £635 million, and about 6 per cent. for gross domestic capital formation of £118 million.

Another central question is whether a regional economy is sufficiently distinct for us usefully to unscramble the U.K. economy in this particular way. The authors are probably correct in thinking that this is a fruitful exercise, though it will be interesting to see how far this work contributes to the formulation of economic policy for Wales. An argument for the preparation of regional social accounts is that they offer cross-checking advantages (though the " Combined Capital Account " with no disclosed residual error is deceptively tidy). Other points which invite questions include the estimates of gross trading profits and surpluses; the estimates of net income from abroad; the treatment of the armed forces; and the calculation of taxes on income. But these queries do not significantly depreciate what is a good piece of work which, it is to be hoped, will continue.

A. D. CAMPBELL.

International Economic Papers. INTERNATIONAL ECONOMIC ASSOCIATION. Macmillan and Company Ltd. 1956. 211 pp. 15s.

This sixth issue of *International Economic Papers* contains the translations of five old papers published between 1900 and 1939, and four recent contributions. The earlier papers are those by Cassel on the Principles of Formation of Passenger Tariffs on the Railways, by Fasiani on Consumption Taxes, by Zassenhaus on the Theory of Economic Planning, by Lösch on International Trade, and the exceedingly interesting paper by Schumpeter on Money and the Social Product. The recent contributions include a paper by Lambert in which the writer is concerned to establish that the origin of Say's Law of Markets is to be traced to Josiah Tucker (1752), and the origin of its rejection to Malthus. There is also an article by Arvidsson analysing Böhm-Bawerk's " three reasons " for a rate of interest in a stationary state, and one by Larsen in which an attempt is made at a statistical examination of the determination of interest rates, based upon an elaboration of Keynes' liquidity theory. Lastly, the work of Novozhilov, of which a part has been translated from the Russian in the current issue of *International Economic Papers*, is of interest in that it constitutes a rather early contribution to linear programming analysis. The author is concerned with the problem of finding the optimum production arrangement, given the desired output pattern. The argument is clearly set out as far as it goes, although the problem has been handled only in a highly simplified form.

H. MAKOWER.

SHORTER NOTICES

Economics in the United States of America: A Review of Interpretation and Research. By RUTLEDGE VINING. U.N.E.S.C.O. Paris. 1956. 62 pp. 5s.

This is one of three trend reports on research in the social sciences in the United States published in the U.N.E.S.C.O. series on *Documentation in the Social Sciences.* It begins with an analysis (for the non-specialist) of the economic problem as a problem of choice. The emphasis on choice determines the rather narrow scope of research activities which are reported, notably developments in the theory of games and in the theory of expectations with their application to economic policy.

Bildung und Verteiling des Volkseinkommens: Gesammelte Aufsätze zur Wirtschaftstheorie und Wirtschaftspolitik. By ERICH PREISER. Vandenhoeck und Ruprecht, Göttingen. 1957. 351 pp. Dm. 19·80.

Professor Preiser is one of the few German liberal writers trained in the inter-war years who is sympathetic to Keynesian ideas. The first set of his reprinted articles represents a painstaking analysis of macro-economic problems which eschews rigorous mathematical treatment—a concession, no doubt to his German readers who are apt to be suspicious of mathematics. More interesting, perhaps, to Anglo-Saxon readers are his three articles on problems in income distribution, the first of which, " Power and Property in the Theory of Distribution ", has appeared in English in *International Economic Papers*. The third set of articles on economic policy, while concerned mainly with Germany, has a historical interest as the articles were mainly published during the Second World War. The first one on the nature of economic planning can be particularly recommended.

International Civil Aviation Organization. By JACOB SCHENKMAN. E. Droz, Geneva. 1955. 410 pp.

This is a useful account of the development and activity of inter-governmental co-operation in air transport. Its main interest will be for those concerned with the historical, legal, political and technical aspects, and especially with the work of the International Civil Aviation Organization. Little economics is to be found, as the author has been content to describe what are called the economic aspects of the Organisation's work—for example, the agreement of commercial rights and the study of airport finance——without giving much economic appraisal of policies. He has been diligent in interviewing personalities and searching out references, the record of which is embodied in the text and numerous footnotes. Since most of these references, however, are from politicians or from within I.C.A.O. itself, the result is often repetitive, and one could wish that Dr. Schenkman had offered more positive critical analysis and review of this material.

The American Railroad Network, 1861–1890. By GEORGE R. TAYLOR and IRENE D. NEU. Harvard University Press. London : Oxford University Press. 1956. xii + 113 + maps. 30s.

This excellent book describes the integration of the American railroad system from its fragmented state in 1860, with only just over half its 30,000 miles of standard gauge, into the continental network of 1890, with almost the entire 160,000 miles of standard gauge, with most of the great rivers bridged or having car-ferry services, with many lines double-tracked, i.e. with the physical obstacles to the free flow of traffic largely eliminated. The intention of the book is limited, to examine as its main topic the standardization of gauge, and this is carried out with the minimum of fuss and maximum of clarity. The opportunity is not lost, however, to show the importance of the subject in the whole context of American economic expansion in the period after the Civil War.

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Wage-rates and Prices: Evidence for Population Pressure in the Sixteenth Century

By E. H. PHELPS BROWN and SHEILA V. HOPKINS[1]

In an earlier paper[2] we gave estimates showing that the basketful of consumables which the English building craftsman could buy with a day's pay began about 1510 to contract progressively, and by 1630 had shrunk to perhaps as little as two-fifths of what it had been through much of the fifteenth century. Since the builder's labourer suffered equally, and he may be regarded as representative of unskilled wage-earners at large, there is reason to believe that the decline was not peculiar to building but afflicted other wage-earners too. It was catastrophic. So far as we know, there is nothing like it anywhere else in wage history. Yet one can read a great deal about the sixteenth century without finding any mention of it, and with some reason, for there was no great outburst to set historians looking for a great social constriction as its origin. Did it really happen in anything like the severity that the figures suggest? If it did, what caused it ?

I

Certainly those who have worked before us on similar materials have found it in them, and in much the same degree. Malthus, for example—though he was using only the prices of grain—said in his *Principles,*[3] " From the end of the reign of Henry VII to the end of the reign of Elizabeth . . . it is an unquestionable fact that the corn wages of labour fell in an extraordinary degree, and towards the latter end of the century they would not command much above one-third of the quantity of wheat which they did at the beginning of it. " Thorold Rogers was emphatic. " I have shown, " he said,[4] " that from the earliest recorded annals, through nearly three centuries, the condition of the English labourer was that of plenty and hope, that from perfectly intelligible causes it sunk within a century to so low a level as to make the workman practically helpless, and that the lowest point was reached just about the outbreak of the great war between King and Parliament. " Knoop and Jones, in their study of the mason,[1] formed their own index of his daily money wage on the average of Oxford, Cambridge and London Bridge, and compared it with an index of the price of food that they formed from Thorold Rogers by combining series for twelve articles, from wheat to pigeons, at equal weights. They found that through 1593–1632 the amount of food the mason's daily wage would buy was from 38 to 40 per cent. of what it had been in 1451–75: our own estimate for a more inclusive basketful is just 40 per cent. Clapham, making his own reconnaissance, found that over the sixteenth century day-wages on the land about doubled while food prices rose nearly sixfold: " this sounds desperate and it was certainly very bad ".[2]

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[1] We are under a special obligation to Dr. D. C. Coleman and Professor F. J. Fisher of the London School of Economics, to the former for making available to us his knowledge of the European price history of the time, and to both for taking much pains to help us with criticism and suggestion in this field of theirs into which our own pursuit of wage movements has led us. They have brought many improvements to our paper, but are in no wise implicated in its treatment or conclusions.

[2] " Seven Centuries of the Prices of Consumables, compared with Builders' Wage-rates ", *Economica*, Nov. 1956. This used wage series from our " Seven Centuries of Building Wages ", *Economica*, August 1955.

[3] T. R. Malthus, *Principles of Political Economy*, 2nd edn. (1826), c. IV, sec. IV, p. 240.

[4] J. E. Thorold Rogers, *Six Centuries of Work and Wages* (1884), c. XIX.

We can add evidence that the purchasing power of builders' wage-rates fell at much the same time, and to much the same extent, in France and Alsace. This evidence is displayed in Figure 1. The materials and methods we describe in our Appendix, but we may mention the main points here.

The French wages and prices are from the Vicomte d'Avenel. It is not hard to call his tables in question[3]—he averaged quotations drawn now here now there from all over France, he lumped what must have been very various articles together under such broad ingenuous heads as " fish ", " clothing " or " wine ". None the less, from nearly six centuries he did collect some 56,000 quotations, and when he gives us the average of those falling within each period of as much as twenty-five years at a time, we can look for some consistency in the results. More compact and continuous series each drawn from one district only—Poitou, Rouen, the Ile de France—are reported[4] as showing some variations in the timing and extent of movements but agreeing in finding a great fall in the purchasing power of the wage-rate during the sixteenth century. In our Appendix we give particulars of the materials from Poitou, and the indexes appear in Table 3. The index of food prices does not differ widely from that from d'Avenel; the wages do not rise so much before 1600; over the whole span an implied fall in the amount of food the wage-rate would buy to 35 per cent. of what it had been compares with our estimate of 37 per cent. from d'Avenel. The closeness is fortuitous, because the wage series in Poitou is fragmentary, and unlike that from d'Avenel contains wages with board, which would have risen less than those without, but at

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[1] D. Knoop & G. P. Jones, *The Mediaeval Mason* (1933), pp. 204–15 & Appendix I.

[2] Sir John Clapham: *A Concise Economic History of Britain* (1949), pp. 186–7, 211.

[3] Cf. F. Simiand: *Recherches Anciennes et Nouvelles sur le Mouvement Général des Prix du 16e au 19e Siècle* (1932), pp. 122–5.

[4] J. U. Nef, " Prices and Industrial Capitalism in France and England, 1540–1640 ", *Economic History Review*, VII (1937), 2, reprinted in *Essays in Economic History*, ed. E. M. Carus-Wilson (1954).

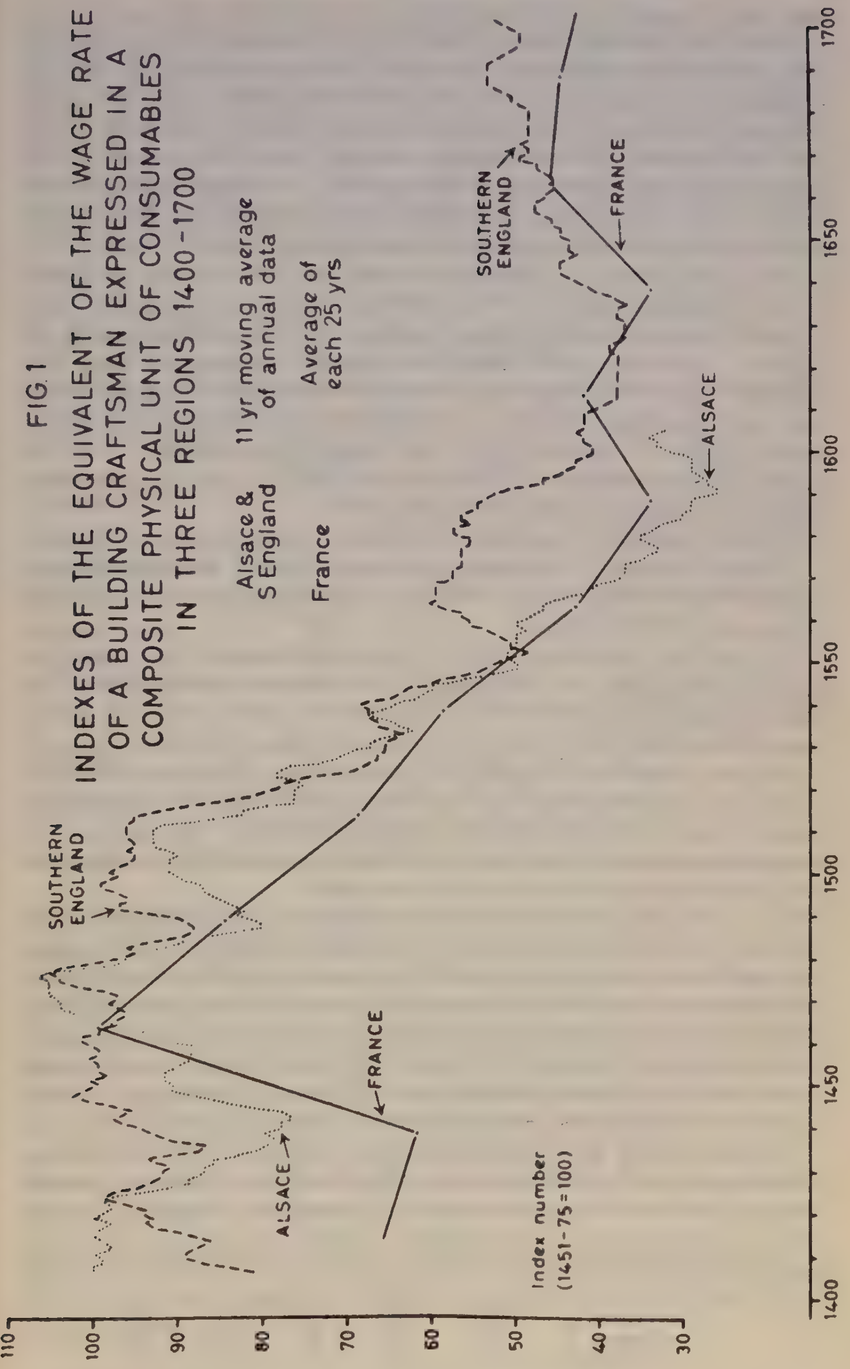

FIG 1

INDEXES OF THE EQUIVALENT OF THE WAGE RATE OF A BUILDING CRAFTSMAN EXPRESSED IN A COMPOSITE PHYSICAL UNIT OF CONSUMABLES IN THREE REGIONS 1400-1700 least there is agreement in the finding of a great fall. But most of all, when we find that the changes indicated by d'Avenel's tables, though extraordinary in themselves, are closely similar to those we find in England and Alsace, we can call in a rule of evidence to justify a kind of circular reasoning: it is improbable that erroneous materials would have led to outcomes so strikingly similar; but if the materials are authenticated they substantiate the outcome. We may add that our French series also yield an outcome similar to that of our English for some time before the comparison displayed here opens in 1401.[1]

Wages and prices in Alsace come from the two volumes published by the Abbé Hanauer in 1876–8. He did for Alsace essentially what Thorold Rogers did for southern England. In the archives mainly of Colmar, Strasbourg and Basle he extracted quotations from the accounts of the time, especially those of monasteries and hospitals, and from municipal records and market reports. He printed them in some fulness of original detail, with careful commentary. But his entries for prices are scanty in the fifteenth century, save for grain, and those for wages do not carry us beyond 1610.

The wage-rates we have used are those of three types of craftsman in France—masons; carpenters; painters, tilers, and plasterers—and those of the first two only in Alsace. In both regions they are wages for the day, without board.

To trace the movement of the prices of consumables we copied as closely as we could the make-up of the composite unit we used for England, except that since Drink which mostly meant malt in England was represented only by wine in France and Alsace, we transferred 10 out of the 22½ points of its weight to Farinaceous. In Alsace, moreover, we had no adequate series for fish, cheese, or textiles. The number of components is generally smaller than in England. The upshot is a composite commodity made up as in Table 1, but not all the components were available throughout the three centuries.

Fig. 1 suggests that in all three countries the day's wage of the building craftsman at the end of the sixteenth century would buy less than half of what it had commanded in the second half of the fifteenth; in France and Alsace the fall appears as rather greater than in England. The English and Alsatian series agree in showing the downturn as setting in sharply between 1509 and 1513. The English and French series, which alone are available after 1605, agree in showing a check to the rate of fall about 1600, and some recovery after the 1630's.

Here are strong grounds for believing that the lot of the building craftsman in all three regions was sadly worsened. But was it really worsened as much as our estimates by themselves suggest? Earlier

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[1] The purchasing power of the builders' wage-rate in composite units of consumables comes out as follows:

(1451–75=100).

25 yrs. beginning:	1276	1301	1326	1351	1376
France	57	49	58	58	63
S. England	52	53	57	59	77

discussion[1] has given reasons to believe they overstate it. Processed products like bread and beer will not have risen in price so much as grain and malt: the price of the loaf, for example, will have had to cover not the cost of grain only but wages for milling, transporting, and baking, and as these did not go up as much as grain, the loaf will have gone up rather less too. This consideration is important. If the prices wage-earners paid at retail were made up, say, as to two-thirds of such wholesale costs of foods and materials as we have used, and as to the other third of wages, an English index of retail prices starting at the base of 100 in 1451–75 would have gone up to only 380 by the end of the sixteenth century, against the 475 of our index, and the basketful would be well over 50 per cent. of its initial size instead of around 40. The sixteenth century also saw significant improvements in methods of manufacture. These things help to explain why the money equivalent of a mason's daily board, where it was entered in the English accounts, rose from 2d. in 1495 to no more than 5d. in 1591–1610, whereas to keep pace with our index of prices it would have had to be 9½d. It is also possible that annual money earnings in England rose more than the daily rate we have followed, because workers combined to keep down the normal day and the stint they would do in it, and so got more overtime; and because the Reformation reduced the number of holidays—Knoop and Jones reckon this will have raised by a fifth the number of days available for work in the year.

TABLE 1

CONSTITUTION AND COMPONENT SERIES OF COMPOSITE UNIT OF CONSUMABLES, FRANCE AND ALSACE, 1401–1700.

Constitution of composite commodity		*Component series*	
	Weight	*France*	*Alsace*
1. Farinaceous ..	30	Wheat, rye	Wheat, rye, barley
2. Meat, fish ..	25	Beef, pork, " fish "	Central tendency of beef, veal, mutton, and pork. No fish
3. Butter, cheese ..	12½	Butter, cheese	Butter, no cheese
4. Drink	12½	" Wine "	Châtenois ordinaire
Subtotal, Food ..	80		
5. Fuel and light ..	7½	Oil, candles, firewood	Central tendencies of hardwood, softwood and faggots. Oil, candles, tapers
6. Textiles	12½	" Clothing ", linen	Nil
TOTAL ..	100		

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[1] Knoop and Jones, *op. cit.*; J. U. Nef, *loc. cit.*

So the equivalent in commodities at retail of the annual money receipts of a wage-earner will have fallen less than our index of the equivalent in foodstuffs and materials at wholesale of his pay for a day. Even so, the fall remains very great, and it still poses the problem why it did not cause an upheaval. Part of the answer may be that it was a fall from a high level, so that great though it was it still left the wage-earner with a subsistence: " the wages the most difficult to be accounted for, " Malthus[1] remarked, " are the high corn wages of the fifteenth, rather than the low corn wages of the sixteenth century ". But the most important consideration remains: many wage-earners occupied land, raised much of their own food, and save for rising rents were insulated from its increasing scarcity. There was a spectrum, from the largely self-subsistent smallholder who occasionally did jobs to get some income in cash, through the workman mainly dependent on his wages but also cultivating a plot, to the landless labourer. It was only the last who felt the full force of the blast.

None the less, a blast it was. There seems no doubt that we are confronted with a great impoverishment. From the Rhine to the Thames, the standard of living of one section of the working population was brought down progressively for more than a century. There can be few parallels to this at other times. Why did it happen now ?

II

Thorold Rogers found his " perfectly intelligible causes " in a deliberate course of oppression and exploitation of the labourer by the ruling class. Can we think there was such a policy, adopted at the same time and pursued to the same outcome over the same period, in all three of our regions ?

But Malthus found the cause in a factor that might well have come into play in several regions at the same time. The last half of the fifteenth century, he wrote,[2] saw wages which, in terms of corn, " were evidently peculiar, and could not therefore be permanent. This indeed is evident, not only by comparing them with previous and subsequent periods, but by considering their positive amount. Earnings of the value of nearly two pecks or half a bushel of wheat a day would allow of the earliest marriages, and the maintenance of the largest families. They are nearly the same as the earnings of the labourer in the United States. . . . . Considering the extraordinary high corn wages at this period, and that they could only fall very gradually, the stimulus must have continued to operate with considerable force during the greatest part of the century. In fact, depopulation was loudly complained of at the end of the 15th and beginning of the 16th centuries, and a redundancy of population was acknowledged at the end of the 16th. And it was this change in the state of population, and not the discovery of the American mines, which occasioned so marked a fall in the corn wages of labour."

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[1] *Principles*, 2nd edn., p. 242

[2] *Principles*, 2nd edn., pp. 252, 256.

We do at least know it was possible that an increase of population occurred at this time. It is generally reckoned, with much reserve, that the population of England and Wales was from 2½ to 3 millions about 1500, and, with more confidence, that it was about 5.8 millions in 1700.[1] Within two centuries there was something like a doubling. It might have taken place by steady accretion throughout, yet borne with different pressure on the labour market at different times, according to different rates of industrial development; or it may have impinged rather suddenly about 1510, and run for some time then at a higher pace than it maintained later. We do not know. But the great course of growth that began in the eighteenth century does seem to have set in rather suddenly, in the 1750's. This movement too was common to a number of countries. K. F. Helleiner, in a recent survey[2] of the evidence, has concluded: "At least two periods of secular increase can be tolerably well identified in the demographic history of medieval and modern Europe, the first extending from about the middle of the eleventh to the end of the thirteenth, the second from the middle of the fifteenth to the end of the sixteenth century. What the exact rates of growth during these earlier phases of expansion were it is impossible to ascertain, but their order of magnitude can be estimated with some confidence, and there can be no doubt that it was comparable to that observed in the early phases of the Vital Revolution" of the eighteenth century.

This comparison reminds us that we do not have to accept Malthus' account of the immediate cause of population growth in the sixteenth century. The fact that in the eighteenth century the available records for Norway and Sweden agree with those for England and Wales in indicating that "while the birth-rate fluctuated round a high level, the death-rate fell"[3] strengthens the finding for each country and suggests a common cause. A lowered virulence of bacteria or virus seems a possible explanation of a fall in mortality occurring at much the same time in several countries with different economic and social structures. This provides a suggestion for the sixteenth century. If indeed it was high real earnings that through earlier marriages caused a rise in population then, we have to explain why those earnings seem to have been sustained for some ninety years, from about 1420 to 1510[4], before their effect on population reacted in turn on them. The alternative possibility is open that the modus was a fall in the death-rate, and the cause some factor other than earnings.

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[1] e.g. Clapham, *op. cit.*, pp. 78, 186.

[2] K. F. Helleiner, "The Vital Revolution Reconsidered", *Canadian Journal of Economics and Political Science*, 23, 1, Feb. 1957.

[3] A. M. Carr-Saunders: *World Population*, p. 62.

[4] Appx. B to Phelps Brown and Hopkins, "Seven Centuries of the Prices of Consumables, compared with Builders' Wage-rates", *Economica*, Nov. 1956.

If a big increase in population did impinge on the England of the early sixteenth century, we can see how it would have tended to bring about the effects we actually find. In some districts and by various methods the outputs of food and wool were increased, but we should not expect agriculture to have the capacity for expansion, extensively or intensively, that could raise either its labour force or its product proportionately to the rise in population. The overspill of labour would have had to go into what industrial employments it could find: the output of industrial products would be raised, and the extra labour would have its share in that output to offer in exchange for the available supplies of food. But those supplies would not have risen so much: there would have to be a squeeze, and it would be the occupations in which the job-hungry overspill was competing that would have to bear most of it. That was Clapham's view. " The main trouble, " he wrote,[1] " came from a growing population in a rural society in which the number of separate agricultural holdings was certainly not growing. Many of the new mouths went to Town or the towns or picked up some trade in the country. Some took to the roads or to crime. All who could added to the family earnings by any available sort of by-employment for some member of the family—spinning, nailmaking, or whatever it might be. The rest worked for what wages they could get . . . "

If it was population pressure that lay behind the fall in the purchasing power of the wage-rate, then the check to the fall after the turn of the century might mark a reduction of the pressure. There are indications that this could have come about. " The seventeenth century, " D. C. Coleman has noted,[2] " ushered in by the famine of 1596–7, brought renewed and severe outbreaks of plague, more harvest failures, wars, worsening climatic conditions and various other pointers towards higher mortality and a markedly reduced rate of population growth ". But the other side of the balance may have been changing too, and the expansion of agriculture—growth in the number it could employ, or in the output per man, or both—would have worked to the same effect.

Our explanation both of fall and check implies changes in the terms of trade between agriculture and industry: as population pressure mounted, we should expect these terms to move against industry, and when the pressure was checked we should expect their movement to be checked too. We can now add evidence that this did in fact happen very markedly in all three of our regions within just the same period as the fall in the purchasing power of the wage-rate. Fig. 2 illustrates this. It confronts us with a movement of prices quite distinct from the general raising that came about at this time through increased supplies of silver and a smaller silver content in the coinage. We have traced it by taking the price index of the food component of our composite commodity in each region, and dividing it into an index of the prices

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[1] *Op. cit.*, p. 211.

[2] D. C. Coleman, " Labour in the English Economy of the Seventeenth Century ", *Economic History Review* (2), 8, 3, April 1956.

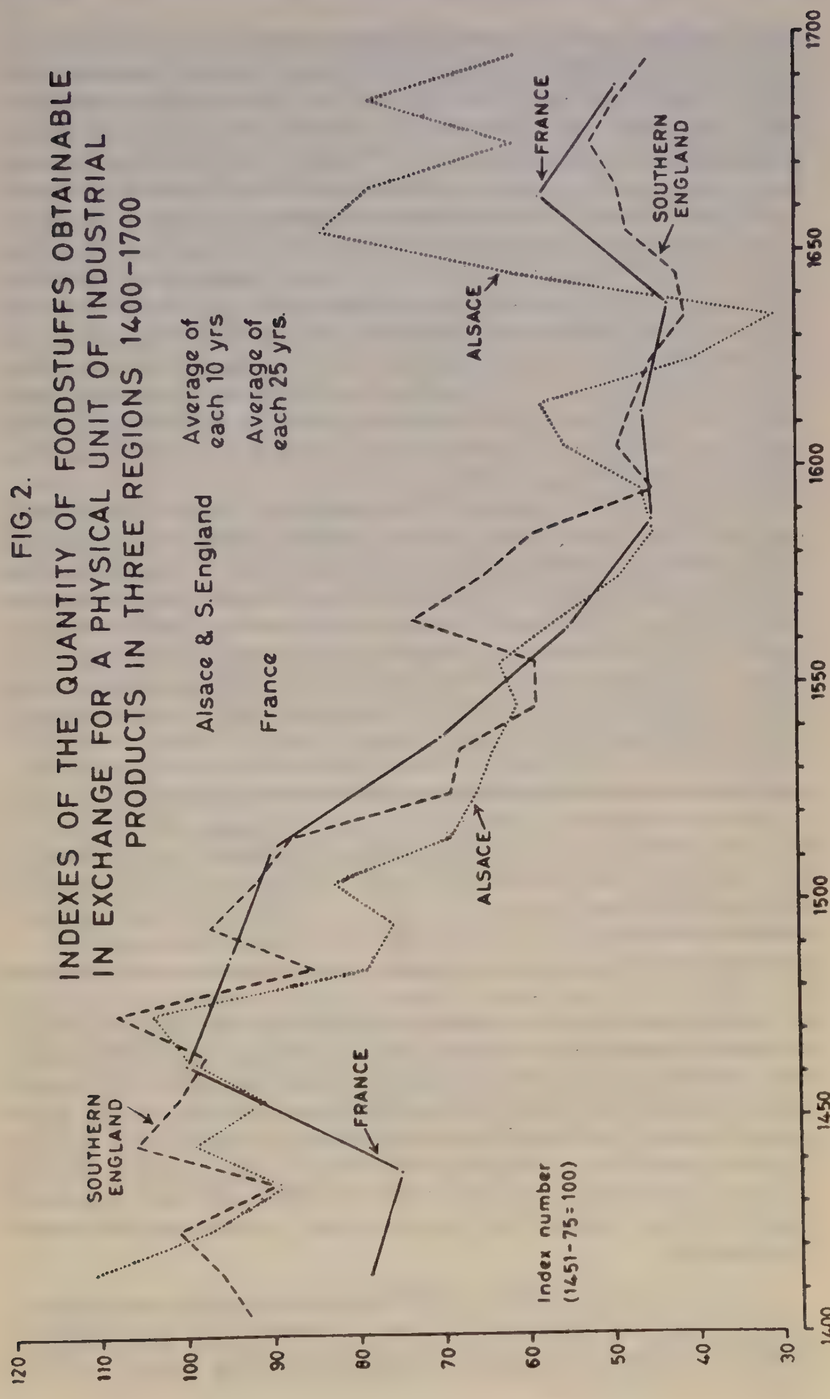

FIG. 2.

INDEXES OF THE QUANTITY OF FOODSTUFFS OBTAINABLE IN EXCHANGE FOR A PHYSICAL UNIT OF INDUSTRIAL PRODUCTS IN THREE REGIONS 1400–1700 of the fuel and light, and textiles (except in Alsace) which we had in the composite commodity, together with some building materials and metals—bricks and lime, iron and lead in Alsace; laths, plain tiles, and bricks, with lead and solder, in southern England; no building materials, but iron, copper and lead in France. The fall of the quotient in all three countries marks the extent to which the prices of foodstuffs rose more than those of our sample of industrial products. It sets in at the same time as the purchasing power of the builder's wage-rate begins to fall. It goes on until in all three regions the quantity of foodstuffs that a unit of industrial products will command in exchange is less than half what it was in 1510. Then at the turn of the century the rate of fall is checked, about the same time as that of the purchasing power of the wage-rate. In England and France both kinds of index first show a clear rise again after 1640. Evidently the shrinking of the wage-earner's basketful was due at least in part to a change in the terms of trade between workshop and farm.

We can go farther than that. The similarity of Figs. 1 and 2 shows that the change in the terms of trade resembled that in the basketful not in direction and timing only but in magnitude. We can draw an inference: the similarity of the sets of curves in the two Figures implies that our prices of industrial products behaved not unlike the wage-rate.[1] This in fact they did, in each country, at least in this sense, that though they rose more than the wage-rate, they did not rise anything like so much more as the price of food did. This is the position in 1601–20, the base being 1451–75 = 100 :—

Index of	*Alsace*	*Southern England*	*France*
Prices of foodstuffs	517	555	729
Prices of some industrial products	294	265	335
Builders' wage-rates	150	200	268

In considering the relation between the last two rows here, moreover, we have to make some allowance for the extent to which the cost of farm products, as raw materials, entered into the prices of fuel and light, and textiles. We conclude that the contraction of the wage-earner's basketful was mostly due to the changed terms of trade between workshop and farm. Probably he did come to get a smaller share of his own industrial product, but what he lost in that way was small compared with what he lost when he came to exchange his product for foodstuffs.

[1] In Fig. 1 we have the quotients of (*a*) wage-rates, divided by (*b*) the price of a composite unit of consumables. In Fig. 2 we have the quotients of (*c*) prices of some industrial products, divided by (*d*) prices of foodstuffs. Since (*d*) is the main component of (*b*) and highly correlated with it, the similarity of the quotients implies some similarity between (*a*) and (*c*).

It follows that Keynes was misled when he argued in the *Treatise*[1] that the general rise in prices had stimulated industrial growth by widening profit margins. As Nef[2] indicated in 1937, the figures Keynes relied on marked a shrinkage of the foodstuffs in the industrial wage-earner's basketful much more than any widening of the margin between his wage and the price of his product.

So the theory that population pressure was at the root of the fall in the purchasing power of the wage-rate receives support from the observed movement of the terms of trade between farm and workshop in all three of our present regions. We must remind ourselves that farm and workshop were not so distinct then as now; but what we see is the growth of population making them more so. If by a wage-earner we mean one whose income in kind from any land he occupies is subsidiary, so that his material wellbeing depends mainly on his wages, then we believe it is generally reckoned that in the first half of the sixteenth century about a third of the occupied population in England were wage-earners: they were, Clapham[3] says, " becoming a more important social group, destined to be a majority well before the next century was over ". The existence of a majority of mainly landless wage-earners—nearly four of every five in the occupied population of Victorian Britain—is a product of population pressure. Wage-earning is not a career that men seek for its own sake; and when there were only three million people in all England and Wales we should not expect many of them to be wage-earners, any more than in a young colony or frontier community of more recent years. But when numbers mounted there were more and more who could not succeed to a holding of land or a niche already fixed in the economic establishment, and had to " look out for a place ".[4] As industry grew it found here the materials of that broad, numerically preponderant class of wage-earners that characterises industrialism. But industrialism did not create that class, it found jobs for it.

We have been concerned with the impoverishment of the wage-earner: the other side of the medal is the enrichment of those who sold farm produce or leased farms at rents they could raise. The cost of labour (if the builder's labourer is representative) and the costs of some leading industrial products were halved in terms of foodstuffs. This pervasive and deepgoing change must have transformed the real incomes of those who were able to share in the higher real earnings of farming as a business.

London School of Economics.

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[1] J. M. Keynes, *A Treatise on Money* (1930), Vol. II, c. 30, (i).

[2] *Op. cit.*

[3] *Op. cit.* pp. 212–13.

[4] Various facets of the relation between the supply of labour and the economy of the times are illuminated by D. C. Coleman, *loc. cit.*

APPENDIX ON SOURCES AND METHODS

ALSACE

Source: L'Abbé A. Hanauer, *Études Économiques sur l'Alsace Ancienne et Moderne*, 2 vols. (Paris, 1876–8.) Unless otherwise stated all page references are to Vol. II.

Unit of money: The wage-rates we have used are all given in one unit of account, the denier. Prices originally quoted in various units were reduced by Hanauer to common terms of the 19th century franc of 4.50 grams silver. We used these terms for all components of our price index and then converted this to an index of prices expressed in the denier as the unit of account by use of Table III, Monnaies Strasbourgeoises, at pp. 496–7 of Vol. I.

Wage-rates: We entered in one graph the rates per day in summer given at pp. 417–20 for master carpenters, masons, and gâcheurs (building labourers). These show much stability. By inspection we took out a single rate as representative of the craftsmen.

Prices: (1) *Composite unit of consumables.* We followed the make-up of the English unit (*Economica*, Nov. 1956, p. 297, Table 1) as far as possible, but here we had no adequate series for fish, cheese, or textiles; and drink was represented by wine alone, whereas in England at this time it was mostly malt, so we transferred 10 points of the English weight for drink to farinaceous. We estimated the components as follows: 1. *Farinaceous.* Pp. 92–97, wheat, rye and barley, in Strasbourg; combined at equal weights. Gaps in rye filled graphically in accordance with the movements of rye at Basle, pp. 82–4. 2. *Meat.* We graphed prices of beef, veal, mutton and pork at Strasbourg, pp. 187–190, and traced a central tendency by freehand; entries for earlier years are few, and we took the price as constant until after 1536. 3. *Butter.* We graphed prices from pp. 286–7, and traced the central tendency by freehand; we took the price as constant until after 1540. 4. *Drink.* No entry before 1478. From pp. 331–4 we took Châtenois ordinaire, and filled gaps, 1478–1610 according to the movement of some associated series in the same table, 1611–1700 by graphical comparison with all the other series except Châtenois edel. 5. *Fuel and Light.* (*a*) We took prices of hardwood, softwood and faggots from pp. 394–7; 1401–1610, we traced a central tendency by freehand, neglecting faggots before 1535; 1611–1700, we took the mean of the central tendencies of softwood and faggots. (*b*) We took prices of candles, oil, and tapers from pp. 374–9; 1401–1610, we combined indexes of the three at equal weights; 1611–1700, we traced a single central tendency by freehand. We combined (*a*) and (*b*) at equal weights. *Weights of components*: 1, 30; 2, 25; 3, 12½; 4, 12½; 5, 7½; total, 87½.

(2) *Indexes of prices of foodstuffs and of industrial products.* The index for foodstuffs is provided by components 1—4 of the composite unit above, combined as there weighted. We made that for industrial products by combining at equal weights component 5, Fuel and Light, with the two following series: (*a*) Metals. Average of entries in each decade, iron pp. 581–2, lead p. 583. 1401–90, lead only; 1491–1580, iron and lead at equal weights; 1581–1670, the previous combined index carried on in proportion to the movement of iron only; no index after 1670. We spliced the index for iron to that for lead at 1491–1580. (*b*) Building materials. We combined " grosses briques " and lime, pp. 432–5, at equal weights, 1411–1700.

SOUTHERN ENGLAND

Sources: J. E. Thorold Rogers, *History of Agriculture and Prices in England*, Vols. IV and V; Sir William Beveridge, *Prices and Wages in England*, Vol. I; present authors in *Economica*, Nov. 1956.

Unit of money: The unit of account, throughout.

Index of purchasing power of wage-rate over composite unit of consumables; in Fig. 1, 11 yr. moving average of col. 2, Appx. B of article in *Economica*, Nov. 1956.

Indexes of prices of foodstuffs and of industrial products. The index for foodstuffs is provided by components 1—4 of the composite unit in *Economica*, Nov. 1956, as there weighted. We made that for industrial products by combining at equal weights components 5 and 6 of that composite unit and indexes for (*a*) building materials and (*b*) metals which we made as follows: (*a*) Thorold Rogers, Vol. IV, p. 473, and Vol. V, pp. 544–5, decennial averages, prices of laths, plain tiles, and bricks; we combined the indexes at equal weights. (*b*) From Thorold Rogers, Vol. IV, p. 488, we made an index for lead by meaning indexes for lead in pigs and lead rolled, and an index for solder, all 1401–1582. We continued the two series by splicing to them at 1571–80 indexes for sheet lead and solder respectively from prices of Naval Stores in Beveridge, pp. 652–3, 658, 677–8 (lead series A). We combined the indexes for lead and solder at equal weights throughout.

FRANCE

Source: *Séances et Travaux de l'Académie des Sciences Morales et Politiques. Compte Rendu.* 1892, 2me semestre. (Paris, 1892.) Pp. 349–419, Rapport sur deux Concours pour le Prix Rossi, by E. Levasseur.

Unit of money: all wages and prices expressed by d'Avenel in the 19th century franc of 4.50 grams silver; final indexes converted by us to indexes of prices in the livre tournois as unit of account, by using Table I at p. 399—see note at pp. 357–8.

Wage-rates: pp. 410–11, Table IX. We combined at equal weights indexes for wages for the day, without board, of (i) masons, (ii) carpenters, (iii) painters, tilers, and plasterers.

Prices. (1) *Composite unit of consumables.* We followed the make-up of the English unit (*Economica*, Nov. 1956, p. 297, Table 1) but as for Alsace gave farinaceous a weight of 30 and drink one of 12½. We estimated the components as follows: 1. *Farinaceous.* At p. 414 Table XII expresses the day's wage of a labourer without board in units of wheat and rye; by applying the annual (250 days') wage of the labourer given in col. 13 of Table IX at pp. 410–11 we obtained the implied price-indexes of wheat and rye, which we combined with weights of 1, 2 respectively. 2. *Meat and fish.* From Table XII we got price-indexes for beef and pork in the same way as for wheat and rye, and we combined them at equal weights. We took an index of the price of fish (unspecified) from the reciprocal of col. 8 of Table XVI at p. 418, from 1301, but omitting 1351–75. Weights: Meat 21, Fish 4. 3. *Butter and cheese.* We obtained indexes for butter and cheese from cols. 10, 9 of Table XVI, and combined them at equal weights. 4. *Drink.* We derived an index for wine (unspecified) in the same way as those of grain and meat from Table XII, accepting the entries only from 1276. 5. *Fuel and Light.* We took indexes of prices of oil, candles and fire wood from 1301 onwards from reciprocals of cols. 21, 22, 23 of Table XVI, and combined them with weights

1, 4, 5 respectively. 6. *Textiles.* We took indexes of prices of clothing (unspecified) and linen from reciprocals of cols. 17, 19 of Table XVI, and combined them with equal weights. *Weights of components*: 1, 30; 2, 25; 3, 12½; 4, 12½; 5, 7½; 6, 12½; total, 100.

(2) *Indexes of prices of foodstuffs and of industrial products.* The index for foodstuffs is provided by components 1—4 of the composite unit above, combined as there weighted. That for industrial products we made by combining at equal weights components 5, 6 above and an index of prices of metals which we made by combining at equal weights indexes for iron, copper and lead from Table XIV at p. 416.

MATERIALS FOR HAUT POITOU ALONE

Source: Paul Raveau, *L'Agriculture et les Classes Paysannes*: ***la transformation de la propriété dans le Haut Poitou au 16ᵉ· siècle*** (Paris, 1926), preliminary study on " Pouvoir d'Achat de la Livre ".

Unit of money: the unit of account. We got our indexes by dividing later entries into that for 1461–72 in each column of Table 1, p. xxxii.

Wage rates: Apparently all available entries have been taken together; mention is made of joiners, carpenters, and masons, but also of mowers, and household staff; wages with board as well as without.

Prices: a composite unit of foodstuffs made up of four series only with weights as follows—wheat 30, cattle 25, " various foodstuffs " 12½, " wine " 12½. All four are available only for five periods; we extended the index they yield there over other periods in proportion to the combined movement of series continuously available.

TABLE 2

ALSACE: INDEXES OF (1) MONEY WAGE-RATES OF BUILDERS, (2) THE PRICE OF A COMPOSITE UNIT OF CONSUMABLES, AND (3) THE POWER OF THE WAGE-RATE TO COMMAND SUCH UNITS, IN THE 15TH, 16TH AND 17TH CENTURIES. 1451–75=100.

(1) 1401–1555 : 100
1556–85 : 117
1586–95 : 133
1596–1610 : 150

Year	(2) *index of composite unit*	(3) (1) ÷ *col.* (2)
1401	104	96
1402	93	108
1403	—	—
1404	107	93
1405	98	102
1406	104	96
1407	—	—
1408	102	98
1409	93	108
1410	96	104
1411	100	100
1412	111	90
1413	100	100
1414	98	102
1415	102	98
1416	117	85
1417	100	100
1418	96	104
1419	97	103
1420	90	111
1421	108	93
1422	104	96
1423	98	102
1424	104	96
1425	107	93
1426	111	90
1427	104	96
1428	114	88
1429	133	75
1430	133	75
1431	129	78
1432	118	85
1433	109	92
1434	115	87
1435	108	93
1436	116	86
1437	117	85
1438	149	67
1439	147	68
1440	157	64
1441	152	66
1442	125	80
1443	116	86
1444	128	78
1445	119	84
1446	122	82
1447	113	88
1448	109	92
1449	100	100
1450	102	98
1451	104	96
1452	103	97
1453	103	97
1454	116	86
1455	116	86
1456	117	85
1457	—	—
1458	—	—
1459	130	77
1460	111	90
1461	104	96
1462	101	99
1463	98	102
1464	86	116
1465	97	103
1466	97	103
1467	100	100
1468	98	102
1469	96	104
1470	93	108
1471	93	108
1472	92	109
1473	97	103
1474	—	—
1475	89	112
1476	91	110
1477	99	101
1478	96	104
1479	—	—
1480	96	104
1481	150	67
1482	150	67
1483	120	83
1484	94	106
1485	104	96
1486	123	81
1487	118	85
1488	119	84
1489	131	76
1490	139	72
1491	153	65
1492	139	72
1493	123	81
1494	109	92
1495	96	104
1496	99	101
1497	—	—
1498	106	94
1499	107	93
1500	123	81
1501	127	79
1502	121	83
1503	114	88
1504	112	89
1505	101	99
1506	101	99
1507	99	101
1508	106	94
1509	92	109
1510	90	111
1511	122	82
1512	125	80
1513	124	81
1514	112	89
1515	130	77
1516	161	62
1517	175	57
1518	134	75
1519	107	93
1520	127	79
1521	128	78
1522	128	78
1523	118	85
1524	129	78
1525	123	81
1526	115	87
1527	125	80
1528	158	63
1529	165	61
1530	192	52
1531	174	57
1532	160	63
1533	157	64
1534	152	66
1535	143	70
1536	138	72
1537	148	68
1538	186	54
1539	135	74
1540	143	70
1541	130	77
1542	141	71
1543	194	52
1544	232	43
1545	218	46
1546	191	52
1547	161	62

TABLE 2 (*continued*)

Year	(2) *index of composite unit*	(3) (1) ÷ *col.* (2)	Year	(2) *index of composite unit*	(3) (1) ÷ *col.* (2)	Year	(2) *index of composite unit*	(3) (1) ÷ *col.* (2)
1548	178	56	1599	384	39	1650	611	
1549	189	53	1600	438	34	1651	625	
1550	209	48	1601	503	30	1652	520	
1551	232	43	1602	520	29	1653	379	
1552	239	42	1603	501	30	1654	381	
1553	186	54	1604	430	35	1655	352	
1554	191	52	1605	385	39	1656	344	
1555	210	48	1606	410	37	1657	348	
1556	243	48	1607	465	32	1658	431	
1557	217	54	1608	462	32	1659	407	
1558	196	60	1609	550	27	1660	394	
1559	226	52	1610	591	25	1661	492	
1560	232	50	1611	568		1662	609	
1561	276	42	1612	575		1663	472	
1562	331	35	1613	494		1664	387	
1563	225	52	1614	533		1665	401	
1564	225	52	1615	549		1666	392	
1565	293	40	1616	488		1667	390	
1566	327	36	1617	420		1668	361	
1567	275	43	1618	435		1669	353	
1568	236	50	1619	392		1670	376	
1569	250	47	1620	483		1671	355	
1570	305	38	1621	549		1672	340	
1571	400	29	1622	1684		1673	376	
1572	353	33	1623	2428		1674	512	
1573	508	23	1624	672		1675	722	
1574	468	25	1625	623		1676	829	
1575	308	38	1626	742		1677	651	
1576	295	40	1627	660		1678	666	
1577	278	42	1628	757		1679	642	
1578	258	45	1629	720		1680	640	
1579	385	30	1630	707		1681	636	
1580	366	32	1631	596		1682	534	
1581	437	27	1632	559		1683	471	
1582	360	33	1633	631		1684	473	
1583	332	35	1634	863		1685	509	
1584	306	38	1635	1150		1686	468	
1585	388	30	1636	1599		1687	473	
1586	534	25	1637	1541		1688	479	
1587	468	28	1638	1625		1689	631	
1588	541	25	1639	1460		1690	821	
1589	554	24	1640	899		1691	928	
1590	464	29	1641	868		1692	837	
1591	454	29	1642	855		1693	960	
1592	496	27	1643	722		1694	1107	
1593	544	24	1644	779		1695	699	
1594	513	26	1645	594		1696	613	
1595	572	23	1646	451		1697	580	
1596	549	27	1647	374		1698	808	
1597	514	29	1648	433		1699	1005	
1598	450	33	1649	531		1700	709	

TABLE 3

FRANCE: INDEXES OF (1) MONEY WAGE-RATES OF BUILDERS, (2) THE PRICE OF A COMPOSITE UNIT OF CONSUMABLES, (3) THE POWER OF THE WAGE-RATE TO COMMAND SUCH UNITS, 1276–1700, (4) THE PRICE OF THE FOODSTUFFS COMPRISED IN THE COMPOSITE UNIT, 1451–1625.
HAUT POITOU: INDEXES OF (5) MONEY WAGE-RATES, (6) THE PRICE OF A COMPOSITE UNIT OF FOODSTUFFS, 1461–1640.
1451–75=100.

	France				*Haut Poitou*	
	(1)	(2)	(3)	(4)	(5)	(6)
1276–1300	31	54	57			
1301–1325	41	83	49			
1326–1350	50	86	58			
1351–1375	81	139	58			
1376–1400	71	112	63			
1401–1425	89	134	66			
1426–1450	92	149	62			
1451–1475	100	100	100	100	100[1]	100[1]
1476–1500	109	128	85	132	92	144
1501–1525	112	161	70	168	101	188
1526–1550	156	265	59	276	117	240
1551–1575	179	411	44	449		497
1576–1600	258	759	34	853	215[2]	779
1601–1625	268	638	42	729	281	775
1626–1650	326	949	34		284[3]	
1651–1675	405	888	46			
1676–1700	428	951	45			

[1] 1461–1472 only
[2] 1576–1589 only
[3] 1630–1640 only

TABLE 4

ALSACE, SOUTHERN ENGLAND, FRANCE. INDEXES OF (1) PRICE OF A COMPOSITE UNIT OF FOODSTUFFS, (2) PRICE OF A SAMPLE OF INDUSTRIAL PRODUCTS, (3) QUANTITY OF FOODSTUFFS COMMANDED IN EXCHANGE BY A UNIT OF INDUSTRIAL PRODUCTS IN OUR SAMPLE, I.E. (2)÷(1), IN THE 15TH, 16TH AND 17TH CENTURIES.

1451–75=100

	Alsace			*England*			*France*			
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	
1401–1410	—	—	—	115	107	93				
1411–1420	99	110	111	111	107	96	140	110	79	1401–1425
1421–1430	110	107	97	107	108	101				
1431–1440	127	113	89	118	106	90	156	117	75	1426–1450
1441–1450	118	117	99	95	101	106				
1451–1460	113	103	91	98	99	101				
1461–1470	98	98	100	105	103	98	100	100	100	1451–1475
1471–1480	95	99	104	93	100	108				
1481–1490	127	100	79	121	103	85	132	125	95	1476–1500
1491–1500	120	92	77	100	97	97				
1501–1510	108	89	82	106	98	92				
1511–1520	134	92	69	116	102	88	168	151	90	1501–1525
1521–1530	141	94	67	159	110	69				
1531–1540	157	101	64	161	110	68	276	194	70	1526–1550
1541–1550	188	115	61	217	127	59				
1551–1560	221	140	63	315	186	59				
1561–1570	280	156	56	298	218	73	449	245	55	1551–1575
1571–1580	376	183	49	341	223	65				
1581–1590	453	204	45	389	230	59	853	385	45	1576–1600
1591–1600	507	231	46	530	238	45				
1601–1610	494	271	55	527	256	49				
1611–1620	540	316	59	583	274	47	729	335	46	1601–1625
1621–1630	1057	425	40	585	264	45				
1631–1640	1169	348	30	687	281	41	1091	466	43	1626–1650
1641–1650	668	411	62	723	306	42				
1651–1660	448	376	84	687	327	48				
1661–1670	453	353	78	702	343	49	980	569	58	1651–1675
1671–1680	616	376	61	675	351	52				
1681–1690	588	456	78	631	310	49	1067	519	49	1676–1700
1691–1700	889	542	61	737	331	45				

The British National Debt

By E. GWEN JONES and EDWARD NEVIN

PART II[1]

IV. THE DISTRIBUTION OF INTEREST PAYMENTS

In Table IX are presented estimates of the sums received by various groups of debt-holders in the form of interest payments on the national debt ; these parallel the estimates of the values of holdings shown in Table V, but wherever possible they were estimated by entirely independent methods. It is unnecessary to define the sectors distinguished in Table IX, since these are (with one exception noted below) identical in scope with those discussed in the preceding section. A brief description of the methods of estimation adopted for this table may be of some interest, however.

1. GOVERNMENT AGENCIES

The payments of " National debt interest " shown in the Revenue Account of the Central Government in the *Blue Book* exclude payments within the government itself.[2] They include, however,

(*a*) interest paid by the Northern Ireland government on its own debt ;
(*b*) the interest element on annuities paid by the Post Office to redeem its borrowing from the Post Office Savings Bank Fund ;
(*c*) interest accruing on National Savings Certificates ;
(*d*) the interest element of loan charges transferred to Health Ministers in respect of hospitals vested in the National Health Service; and
(*e*) interest on stock issued to finance land purchase in Ireland.[3]

The first step necessary, therefore, was to compile a series of interest payments from the published Exchequer returns comparable with that shown in the *Blue Book*. This was done by placing the Exchequer figures on a calendar year basis and adding to them the amounts involved in items (*a*) to (*e*) above, all of which it is possible to estimate from various published sources.[4] The differences between the series so compiled and that shown in the *Blue Book*, then, must represent interest receipts on the debt held by the Exchange Equalisation Account, Issue Department of the Bank of England, National Insurance Funds and other departmental holdings (other than those of the Savings Banks funds). The total interest receipts of the National Insurance Funds can be calculated separately from the detailed statement of the holdings of these funds which is published annually[1] and this element is therefore shown separately in Table IX.

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[1] For Part I see *Economica*, August 1957.

[2] The payments on the holdings of the Post Office and Trustee Savings Banks, however, are *not* excluded, despite the fact that the funds themselves are treated by the *Blue Book* as part of the Central Government—see *Sources and Methods*, Chap. VIII, p. 202.

[3] On all this, see *ibid*, pp. 201–2.

[4] *Finance Accounts* of the Northern Ireland government ; *Post Office Commercial Accounts* and *Sources and Methods*, Chap. VIII, p. 202 ; *Blue Book*, Table 26 ; Civil Estimates ; annual accounts of the Irish Land Purchase Fund.

The only government agency for which allowance had still to be made was the Banking Department of the Bank of England. Table 35 of the *Blue Book* gives details of the " non-trading " income received by various groups of public corporations, that for the Banking Department being shown under the heading " Other corporations ".[2] It was assumed that 90 per cent. of this total represented the national debt interest received by the Banking Department, since the non-trading incomes of the other public corporations included in this group (and the Bank's investment income from other sources) are hardly likely to amount to a very significant total.[3]

2. Post Office and Trustee Savings Banks

The interest receipts of the Savings Banks from holdings of the national debt were estimated by calculating the annual earnings on the collection of securities shown in the published accounts each year.[4] The resulting totals were then averaged for each pair of financial years.

3. Insurance, Banking and Finance

Table 59 of the *Blue Book*[5] shows the interest received by this sector from sources other than the company sector. (These figures exclude the income of life assurance and superannuation funds, which are treated as part of the personal sector.)[6] Receipts from the personal sector are estimated in Table 26 of the *Blue Book* (" Interest paid ") except that no estimate for interest on hire-purchase transactions is included in this item. Payments under this heading were estimated in the following way. It is reliably reported that in 1955 hire-purchase loans by the main finance companies amounted to about £170 million.[7] For 1954 and 1955, the total of bank advances to hire-purchase houses has been published by the British Bankers' Association ; these figures were used as index-numbers and applied to the 1955 figure of £170 million to obtain an estimate for 1954. For earlier years the same method was used, except that bank advances to the whole " other financial " group had perforce to be used as an index since the division between hire-purchase houses and other financial borrowers was not published before 1954. In 1955 the interest rate paid on hire-purchase loans was believed to vary between 7 and 12 per cent.;[1] it was therefore assumed that interest payments on such loans amounted throughout to 10 per cent. of the estimated total outstanding.

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[1] Conveniently summarised in *British Government Securities*.

[2] Besides the Bank, this group includes the B.B.C., National Service Hostels Corporation, National Film Finance Corporation, National Research and Development Corporation, Festival Gardens Ltd., I.T.A., Colonial Development Corporation, Overseas Food Corporation and the internal compensation funds held by other public corporations. See *Sources and Methods*, Chap. VII, p. 177.

[3] See footnote 2 above. An inspection of the accounts of the major other corporations involved confirmed that their investment income was very small, although not entirely negligible.

[4] See *Post Office Savings Bank Account* and *Trustee Savings Banks Account*. These are conveniently summarised (and estimated on a March 31st basis) in *British Government Securities*.

[5] Supplementary Statistics, p. 61.

[6] *Sources and Methods*, Chap. VI, p. 159.

[7] *The Economist*, 16th June 1956, p. 10. It is assumed that the relatively small proportion of industrial hire-purchase finance included in this is offset by the advances of companies not included in the estimate.

Having deducted personal interest payments from the sector's receipts of " other interest ", the amount remaining comprised national debt interest *plus* (*a*) interest on loans to public corporations and local authorities, (*b*) interest payments on securities issued by public corporations and local authorities, and (*c*) earnings on overseas investments. An arbitrary deduction of 20 per cent. was made from the amount remaining in order to allow for these items.[2] In view of the complexity of these adjustments (and the arbitrary nature of several of them) it has been thought advisable to set them out fully in Table VII.

TABLE VII

INTEREST RECEIPTS OF THE INSURANCE, BANKING AND FINANCE SECTOR ON HOLDINGS OF THE NATIONAL DEBT

£ million

Calendar year	Interest receipts from outside the company sector	*Less* interest receipts from persons	*Less* interest receipts on hire-purchase loans	Total non-company, non-personal interest receipts	*Less* estimated receipts from public corporations, etc.	*Plus* national debt interest receipts by life funds	Total
1948 ..	188	75	4	109	22	37	124
1949 ..	195	84	4	107	21	39	125
1950 ..	208	93	6	109	22	39	126
1951 ..	232	111	7	114	23	40	131
1952 ..	269	130	6	133	27	44	150
1953 ..	301	145	6	150	30	48	168
1954 ..	327	165	7	155	31	49	173
1955 ..	379	195	17	167	33	50	184

To this estimate for banking, insurance and finance must finally be added one for the receipts on holdings of the national debt by life assurance and superannuation funds. The total investment income of such funds is shown in Table 26 of the *Blue Book*, but no distinction is there made between national debt interest and other property income. Recourse was therefore had to the periodic analyses of the distribution of the assets of British assurance companies published in *The Economist*.[1] The percentage of assets held in the form of British government securities was first reduced by 20 per cent. to allow for (*a*) holdings of government-guaranteed securities, and (*b*) the fact that the yield on government securities is probably somewhat lower than the average yield on insurance companies' total assets.[2] This reduced percentage was applied to the total property income given in the *Blue Book* to arrive at the estimates shown in Table VII.

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[1] *Ibid*, p. 13.

[2] I.e. roughly 15 per cent. to allow for receipts from public corporations (see comment earlier on the adjustment adopted for holdings of government-guaranteed securities) and 5 per cent. for the remainder.

4. COMPANIES

Table 29 of the *Blue Book* shows the non-trading income of the company sector. This excludes interest and dividend payments within the company sector, but includes, besides interest receipts on holdings of the national debt :

(*a*) receipts of the insurance, banking and finance sector already discussed in (3) above.

(*b*) rental income from land and buildings owned by companies and let to tenants ; and

(*c*) interest and dividends from abroad (other than dividends from subsidiaries resident abroad, which are treated as trading profits earned abroad).[3]

Item (*a*) can be excluded by subtracting the investment income of the insurance, banking and finance sector shown separately in Table 59 of the *Blue Book*. Item (*b*) is a little more difficult. According to *Sources and Methods*[4] it amounted to about £90 million in 1954, although the warning is given that the reliability of this figure is poor. This estimate was taken back to earlier years, and onwards to 1955, by using as an index the estimates in Table 59 of the *Blue Book* for receipts of the insurance, banking and finance sector from rent of property (less repairs).[5] For item (*c*), it appears that such receipts " represent less than one-tenth of total non-trading income ".[6] A deduction of one-tenth of total non-trading income was therefore made to allow for interest and dividends earned abroad and for the other minor items in non-trading income other than interest receipts from the public sector and the items already accounted for.[7]

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[1] 18th November, 1950, p. 847, Table I; 17th July, 1953, p. 220, Table I; 14th July, 1956, *Supplement*, p. 4, Table II.

[2] It must be remembered that total assets include some (e.g. cash balances) on which the yield will be less than that on government securities.

[3] *Sources and Methods*, Chap. VI, pp. 162-3.

[4] Chap. VI, p. 162 and XII, p. 337.

[5] In 1954 these appear to have amounted to one half of the total rent earnings of the company sector.

[6] *Sources and Methods*, Chap. VI, p. 163.

[7] In particular for receipts by companies (other than those in the insurance, banking and finance group) from the personal sector—e.g. hire-purchase interest paid to retailers.

From the total non-trading income remaining after all these adjustments, a final deduction of 20 per cent. was made to allow for interest receipts on holdings of securities issued by public corporations and local authorities.[1] The residual was taken to equal receipts of interest on holdings of the national debt.[2] The details of all these adjustments are shown in Table VIII.

TABLE VIII

INTEREST RECEIPTS OF THE COMPANY SECTOR ON HOLDINGS OF THE NATIONAL DEBT

£ million

Calendar Year	Total non-trading income	*Less* receipts by insurance, banking & finance sector from outside company sector	*Less* rent	*Less* interest from abroad	*Less* interest from public corporations and local authorities	National debt interest
1948 ..	329	188	80	33	6	22
1949 ..	331	195	80	33	5	18
1950 ..	356	208	80	36	6	26
1951 ..	382	232	80	38	6	26
1952 ..	435	269	84	44	8	30
1953 ..	471	301	88	47	7	28
1954 ..	509	327	90	51	8	33
1955 ..	568	379	92	57	8	32

5. PERSONS AND FRIENDLY ETC. SOCIETIES

For lack of any alternative method, this total was calculated by multiplying the estimated holdings of debt shown in Table V by the average rate of interest paid each year on all national debt other than floating debt (none of which will be held by this sector). The *Blue Book* estimate of accrued interest on National Savings Certificates (Table 26 of the *Blue Book*) was added to the total arrived at in this way.

6. EXTERNAL HOLDINGS

Interest payments on debt raised under the National Loans Act 1939 are shown separately in the *Finance Accounts*; all of these can

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[1] See footnote 2, page 309 above.

[2] Unfortunately this series is not strictly comparable with the estimates of debt holdings by public companies shown in Table V. This is because the latter were confined (of necessity) to public companies, whereas the series shown in Tables VIII and IX refer to the company sector as defined in the *Blue Book*—i.e. it will include, as well as public companies, private companies and co-operative societies. (In terms of paid-up capital, that is, the company sector involved in Tables VIII and IX is roughly 75 per cent. bigger than that referred to in Table V—see *Sources and Methods*, Chap. VI, pp. 142–3).

TABLE IX

DISTRIBUTION OF INTEREST PAYMENTS ON THE NATIONAL DEBT

£ million

Calendar Year	Government agencies				Post Office and Trustee Savings Banks	Insurance, banking and finance	Companies	Persons, Friendly etc. Societies	External holders	Other holders	Total
	National Insurance Funds	Bank of England-Banking Dept.	Other	Total							
1948 ..	23	5	14	42	71	124	22	133	63	91	546
1949 ..	23	5	18	46	72	125	18	135	58	94	548
1950 ..	26	6	7	39	70	126	26	132	59	88	540
1951 ..	30	6	9	45	73	131	26	128	98	88	589
1952 ..	31	7	24	62	71	150	30	122	120	109	664
1953 ..	32	8	24	64	70	168	28	131	130	103	694
1954 ..	33	8	36	77	68	173	33	140	128	87	706
1955 ..	35	9	37	81	68	184	32	138	160	116	779

be assumed to go to non-resident holders.[1] The only adjustment necessary for this element, therefore, was that of placing the data on a calendar-year basis.

Since a substantial part of other non-resident holdings (i.e. those of internal debt) may be in the form of floating debt, it was thought reasonable to assume that the average rate of interest paid on them was that published in the *Annual Abstract of Statistics* as the average yield on short-term government securities. This rate was then applied to the estimated total non-resident holdings shown in Table V less the total debt raised under the National Loans Act, 1939, of which account has already been taken.[2]

7. Other Holdings

This is the residual obtained by subtracting the sum of items 1–7 from the total interest payments shown in the Exchequer returns, the latter having been adjusted to a calendar-year basis. It represents the interest payments to holders not specified elsewhere[3] and the net total of errors and omissions in the preceding columns.

The final estimates are shown together in Table IX. Once again, a percentage distribution has been calculated in order to assist the reader in obtaining a general impression of the pattern of distribution ; this is shown in Table X.

Table X

Distribution of Interest Payments on the National Debt

(Per cent. of total)

Calendar Year	Government agencies	Post Office and Trustee Savings Banks	Insurance, banking and finance	Companies	Persons, etc.	External holdings	Other
1948 ..	7·7	13·0	22·7	4·0	24·4	11·5	16·7
1949 ..	8·4	13·1	22·8	3·3	24·6	10·6	17·2
1950 ..	7·2	13·0	23·3	4·8	24·5	10·9	16·3
1951 ..	7·6	12·4	22·3	4·4	21·7	16·7	14·9
1952 ..	9·3	10·7	22·6	4·5	18·4	18·1	16·4
1953 ..	9·2	10·1	24·2	4·0	18·9	18·7	14·9
1954 ..	10·9	9·6	24·5	4·7	19·8	18·2	12·3
1955 ..	10·4	8·7	23·6	4·1	17·7	20·6	14·9

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[1] The only interest-bearing debt under this heading not issued to non-residents were Ulster Savings Certificates and deposits by the Trustee Savings Banks. At their maximum in the period under review (1948) these amounted to less than 2 per cent. of the total debt raised under the National Loans Act; in 1956 only Ulster Savings Certificates remained outstanding, amounting to less than 1 per cent. of the total debt raised under the Act and still outstanding.

[2] An outside check on this estimate is worth mention. Total property income paid abroad from the United Kingdom is shown in the *Blue Book*, Table 7 ; that part of it paid by companies is shown in Table 29. The difference between the two series must therefore cover (*a*) interest payments on the national debt by the

V. CONCLUSION

Since the object of this article has been to describe the processes required to assemble meaningful data concerning the national debt, no attempt will be made to discuss the implications of the estimates. It is believed that the presentation of the statistics themselves is a necessary and not uninteresting exercise, the results of which others may possibly find of some use for a variety of purposes.

Without discussing the details of the estimates, however, it is obvious that the role of the national debt in the modern British economy is a complex one ; it is considerably more complex, at any rate, than would be implied by discussions of public finance in which the question of the national debt is dismissed with very little ado, the debt being regarded as merely a medium through which occurs a rather unfortunate redistribution of income which has to be corrected through taxation. The relatively small proportion of the annual interest charge going to persons (even allowing for the share which can be presumed to go to persons having a relatively small estate) is an indication of this. The substantial share of the national debt which the estimates suggest may be accounted for by holdings outside the United Kingdom, and the balance of payments burden implicit in this, is another matter of general significance.

It may be, in other words, that the national debt of the United Kingdom is a subject which merits some attention, not because of the disadvantages traditionally held to be associated with it—and especially the effects it generates on the distribution of income, and, consequently, the level of taxation—but because of the changes in its structure and function which the present study has sought to bring out in purely statistical terms.

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government and (*b*) other property payments abroad by persons and public corporations. (See *Sources and Methods*, Chap. VI, pp. 165–6, Chap. XIII, pp. 344–5.) The figures for the years 1948–1955 are as follows, where (*a*) = total payments abroad and (*b*) payments abroad by companies (£ mn.) :—

	1948	1949	1950	1951	1952	1953	1954	1955
(*a*)	210	220	251	328	369	356	382	446
(*b*)	95	99	115	156	185	165	168	215
(*a–b*)	115	121	136	172	184	191	214	231

[3] e.g. local government authorities, persons having an estate valued at less than £2000 (except for accrued interest on National Savings Certificates), private non-profit-making bodies, private pensions funds, trustees, etc.

Some Logical Relations in Revealed Preference Theory

By H. A. John Green

1. Two recent articles, [6] and [10], have applied the powerful technique of relational logic, made familiar to economists by Professor Arrow [1], to revealed preference theory, and Professor Hicks has abandoned indifference curves for this technique in his latest work on demand theory ([4], pp. 18–19). The present paper represents a further exercise in this field, with the purpose of investigating certain difficulties in articles by Professors Houthakker [5] and Samuelson [8], [9], which appeared in *Economica* a few years ago. Professor Houthakker claims to have discovered :

> a proposition which, apart from continuity assumptions, summarizes the entire theory of the standard case of consumer's behaviour (no indivisible goods or choices between probabilities; all income spent). Such a proposition . . . should be a necessary and sufficient condition for the existence of ordinal utility (p. 161).

This proposition has been christened the " Strong Axiom" by Professor Samuelson ([8], p. 370).

An attempt to formulate Professor Houthakker's argument axiomatically seems to lead to the following conclusions :

(*a*) His axioms are not independent ; indeed the Strong Axiom follows from his remaining axioms ;

(*b*) The Strong Axiom could have been omitted from his set of axioms in the proof of the transitivity of indifference which lies at the heart of his argument ;

(*c*) The Strong Axiom is not sufficient for the transitivity of indifference.

We conclude, on the basis of these results, that a careful distinction between necessary and sufficient conditions for ordinal utility robs of the greater part of its significance an as yet unproved theorem proposed by Professor Samuelson ([9], p. 9). This paper is offered, with some diffidence, as an attempt to shed light on Professor Samuelson's " open question " (*loc. cit.*).

2. It has been shown elsewhere [3] that the assumption that a consumer has a complete and consistent system of preferences is equivalent to the adoption of the following four independent propositions (x, y, z . . . stand for members of the set of batches of goods from which the

consumer is called upon to choose ; P and I mean respectively " is preferred to " and " is indifferent to ") :

*P*1. *For all* x, y, xIy *if and only if neither* xPy *nor* yPx.
*P*2. *For all* x, y, *not both* xPy *and* yPx.
*P*3. *For all* x, y, z, *if* $xPyPz$ *then* xPz.
*P*4. *For all* x, y, z, *if* $xIyIz$ *then* xIz.

Briefly, *P*1 – *P*4 say that for any pair of batches of goods x and y exactly one of three relations holds—either x is preferred to y or y is preferred to x or the two are indifferent—and that the relations of preference and indifference are transitive (cf. [11], p. 82).

We wish in this section to establish certain relationships between *P*1 – *P*4 and the following :

*P*5. *For all* x, y, z, *if* $xPyIz$ *or* $xIyPz$ *then* xPz.
*P*6. *For each* x, *there is a* y *such that* xIy.

*P*5 says that if two batches are indifferent, any batch that is superior (inferior) to the first is superior (inferior) to the second.[1] The relationships to be established will be proved as Theorems 1 and 2. First we introduce a further proposition stating the symmetry of the relation I, and state an obvious lemma :

*P*7. *For all* x, y, *if* xIy *then* yIx.
Lemma 1 *: P*1 *implies P*7.

Theorem 1 *: P*1 *and P*5 *together imply P*4.

Proof : Assume *P*1 and *P*5. By Lemma 1, we can then also assume *P*7.
Consider x, y, z such that $xIyIz$.
Suppose xPz
Since yIz, zIy *P*7
Hence $xPzIy$, so that xPy *P*5
xPy contradicts xIy *P*1
Suppose zPx.
Then $zPxIy$, so that zPy *P*5
zPy contradicts yIz *P*1
Since xPz and zPx are both false,
it follows that xIz *P*1

Theorem 2 *: P*1, *P*3, *P*5 *and P*6 *together imply P*2.

Proof : Assume *P*1, *P*3, *P*5 and *P*6. By Lemma 1 and Theorem 1, *P*4 and *P*7 can also be assumed.
Consider x, y such that xPy and yPx.
Then xPx *P*3
There is a z such that xIz *P*6
Hence zIx *P*7
Since $xIzIx$, xIx *P*4
This contradicts xPx *P*1

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[1] In Professor Hicks's terminology, *P*5 " gears " the relations P and I together (cf. [4], p. 32).

3. In his 1950 article [5] Professor Houthakker claims to have shown that, apart from continuity assumptions, an axiom equivalent to our *P*2 is sufficient to establish the transitivity of indifference (*P*4). Now in effect he also assumes *P*1 and *P*3, so that the claim, if it can be substantiated, is effectively that *P*1 – *P*3 are together sufficient to establish the existence of a complete and consistent system of preferences, i.e. one satisfying *P*1 – *P*4, sometimes called an " integrable " preference field.

We shall show in this section that Professor Houthakker assumes in his argument not only *P*1 and *P*3 but also *P*5 and *P*6. It follows that:

(*a*) Since *P*1, *P*3, *P*5, and *P*6 have been shown in Theorem 2 above to imply *P*2, Professor Houthakker's axioms are not independent.

(*b*) Since *P*1 and *P*5 have been shown in Theorem 1 above to be sufficient for *P*4, he could have dispensed with *P*2 in his proof of the transitivity of indifference.

Professor Houthakker assumes that the consumer spends all his income, and that goods are perfectly divisible (p. 161). He also follows Professor Samuelson in assuming that the choice of a batch of goods from the alternatives available indicates its superiority over all rejected batches (p. 160). Thus if at some set of prices (p^x) (which will not in this paper be assumed unique) at which a batch of goods x is chosen, there is another batch y such that $\Sigma p^x (q^x - q^y) \geqq 0$, x is said to be revealed preferred to y.[1] Professor Samuelson has shown ([7], pp. 111–2) that if we adopt a special case of *P*2—the so-called Weak Axiom that if $\Sigma\, p^x (q^x - q^y) \geqq 0$ (x is revealed preferred to y) and $x \neq y$, then $\Sigma\, p^y (q^x - q^y) > 0$ (y is not revealed preferred to x)—a unique batch of goods will be chosen in any one price-income situation. In this paper we deliberately avoid taking *P*2 as an axiom; hence we must admit that different batches of goods may be chosen, on different occasions, in the same price-income situation, even though this implies that each of the two batches so chosen is preferred to the other. We shall need this fact later, and therefore state it here as a lemma.

Lemma 2: *If two batches x and y are bought with the same income at the same set of prices, then xPy and yPx.*

Professor Houthakker adopts in practice the " extended " definition of revealed preference which Professor Samuelson ([8], pp. 370–1) makes explicit. He takes $\Sigma\, p^x (q^x - q^y) \geqq 0$ and $\Sigma\, p^y (q^y - q^z) \geqq 0$ (with $x \neq z$) as evidence that x is preferred to z (p. 162), though it is of course not necessarily true that $\Sigma\, p^x (q^x - q^z) \geqq 0$. This extended definition of revealed preference makes the relation transitive; hence *P*3 is assumed.[2]

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[1] We leave open for the time being the question whether x can be preferred to itself.

[2] Mr. Newman's treatment [6] is confusing on this point. Although his definition of revealed preference is exclusively in terms of non-transitive binary comparisons, his Theorem 3 (p. 164) proves that revealed preference is transitive. (Cf. H. S. Houthakker, " Mr. Newman on Revealed Preference ", *Oxford Economic Papers*, June 1957, p. 234.)

He now proposes a method of identifying all the batches " equivalent " to a given batch x (pp. 165 ff). Consider a set of prices (p^y) at which x is not bought. For some incomes M^y it will be possible to construct a sequence of batches, leading from x to the batch (or batches) $y, y', \ldots (\neq x)$, bought at prices (p^y) with income M^y, revealing that xPy, xPy', . . .; for other incomes, a sequence leading from x to y'', y''', . . . , revealing that $y''Px$, $y'''Px$, ...[1] There will, however, be one income which will " determine a batch[2] about which no direct or indirect indications as to its inferiority or superiority with respect to [x] are available " (p. 168). If neither x nor y is directly or indirectly revealed preferred to the other, the two are " presumed equivalent ". Clearly presumed equivalence and (directly or indirectly) revealed preference are related to each other exactly as are the relations I and P in proposition $P1$.

We must now show that Professor Houthakker implicitly assumes $P5$ and $P6$. He says :

> For each price-set [e.g. (p^y)] we then have one income with the unique property . . . that all higher incomes are connected with [x] by a chain of goods-batches of descending superiority and all lower incomes by a chain of batches of ascending superiority (p. 169).

Let us make the following definition :

Definition 1 : *xHy if and only if x is bought at the same set of prices as y and with a larger income.*

The following lemmas are immediate :

Lemma 3 : *For all x, y, if xHy then xPy.*

Proof : If xHy, then $\Sigma\, p^x (q^x - q^y) > 0$.

Lemma 4 : *For all x, y, if x and y are bought at the same set of prices, then exactly one of the following holds : either xHy or yHx or x and y are bought with the same income.*

Proof : Directly from Definition 1.

The following propositions, $P8$ and $P9$, are implied by the quotation above:

$P8$. *For all x, and any set of prices* (p^y), *there is a batch of goods y, bought with some income at prices* (p^y), *such that xIy.*

$P8$ is implied by the assertion that a " limiting income " as described in the quotation always exists. It implies " continuity " in the consumer's scale of preferences, which nowhere passes directly from superior to inferior batches, but always passes through an indifferent batch on the income-consumption curve corresponding to (p^y) (cf.

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[1] If y and y', say, are bought with the same income at the same set of prices, then by Lemma 2, yPy' and $y'Py$. Hence if xPy, then $xPyPy'$ so that xPy' by $P3$. If yPx, then $y'PyPx$ so that $y'Px$ by $P3$.

[2] Since we are not assuming $P2$, we must insert here " or batches ".

[11], *loc. cit.*). The availability of such a batch will also normally require Professor Houthakker's assumption that goods are perfectly divisible. And *P*8 will be implied by the continuity of preferences and the perfect divisibility of goods.

Clearly *P*8 implies *P*6.

*P*9. *For all* x, y, z, *if* $xHyIz$ *or* $xIyHz$, *then* xPz.

*P*9 is similar to *P*5, and is indeed implied by it. It is also implied by the uniqueness of the limiting income described in the quotation.

A further proposition we shall need is used by Professor Houthakker at a later stage in his proof (p. 170). Given any two points on an income-consumption curve, he assumes it possible to find a point between them ; this follows from the perfect divisibility of goods and income :

*P*10. *For all* x, y, *if* xHy *there is a* z *such that* $xHzHy$.

We now show that Professor Houthakker's assumptions *P*1, *P*3, and *P*8 – *P*10 imply *P*5. First we prove a lemma that introduces one further proposition :

*P*11. *For all* x, y, *if* xPy *then :*
  (*a*) *There is an* x' *such that* $xHx'Iy$
  (*b*) *There is a* y' *such that* $xIy'Hy$.

Lemma 5 : *P*1, *P*3 *and* *P*8 *together imply* *P*11.

Proof : Assume *P*1, *P*3 and *P*8. Lemmas 2, 3, and 4 can be assumed as they follow directly from definitions.

Consider x, y such that xPy.

(*a*) There is an x' bought at the same prices as x such that $x'Iy$ *P*8

Suppose $x'Hx$

Then $x'Px$ .... Lemma 3

Since $x'PxPy$, $x'Py$ *P*3

This contradicts $x'Iy$ *P*1

Suppose x' and x are bought with the same income. There are two possible cases :

(i) $x = x'$. Then xPy and xIy

This is a contradiction *P*1

(ii) $x \neq x'$. Then $x'Px$ .... Lemma 2

Then $x'PxPy$, so that $x'Py$ *P*3

This contradicts $x'Iy$ *P*1

Therefore neither $x'Hx$ nor are x and x' bought with the same income.

If follows that xHx' .... Lemma 4

(*b*) The proof is similar to that for (*a*).

Theorem 3 : *P*1, *P*3, *and P*8 – *P*10 *together imply P*5.

Proof: Assume *P*1, *P*3, and *P*8 – 10. By Lemma 5, *P*11 can then also be assumed.

Suppose $xIyPz$.

There is a y' such that $yHy'Iz$ *P*11

There is a y'' such that $yHy''Hy'$ *P*10

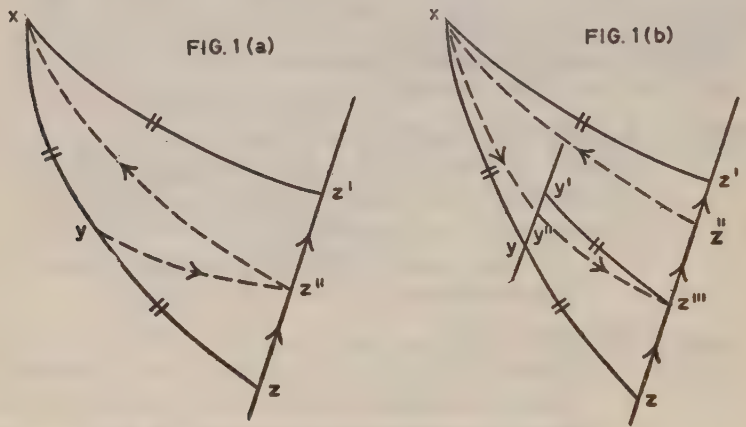
Hence $xIyHy''$, whence xPy'' *P*9

And $y''Hy'Iz$, whence $y''Pz$ *P*9

Since $xPy''Pz$, xPz *P*3

It can be similarly shown that xPz follows from $xPyIz$.

4. Readers may be interested in a diagrammatic proof of the transitivity of indifference using only *P*1, *P*3, and *P*8 – *P*10. A slightly revised version of Professor Houthakker's proof, which also makes use of *P*2 (pp. 169–171), is given for the purpose of comparison.



Lines Bearing an = Sign Join Indifferent Positions.
Arrow-Heads Point Towards Preferred Positions.

In Figure 1(a), $xIyIz$ but xPz. P11[1] guarantees the existence of a z' such that $xIz'Hz$, and *P*10 the existence of a z'' such that $z'Hz''Hz$. By *P*9, $xPz''Py$, so that xPy by *P*3. This contradicts xIy by *P*1.

In Figure 1(b), $xIyIz$, xPz, and $xIz'Hz$ as in 1(a). *P*10 now yields z'', z''' such that $z'Hz''Hz'''Hz$. By *P*11 there is a y' such that $z'''Iy'Hy$ and by *P*10 a y'' such that $y'Hy''Hy$.[2] Now by *P*9 we have $z'''Py''PxPz''$, so that $z'''Pz''$ by *P*3. But since $z''Hz'''$, $z''Pz'''$ (Lemma 3). This contradicts *P*2.

5. We have shown that Professor Houthakker's axioms are not independent, since *P*2 follows from the rest, and that *P*2 is not needed

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[1] *P*11 follows from *P*1, *P*3 and *P*8 ; see Lemma 5.

[2] This seems to meet the objections of Messrs. Corlett and Newman [2].

in the proof of the transitivity of indifference. We shall now show that $P2$, even with $P1$ and $P3$, is not sufficient for the transitivity of indifference.

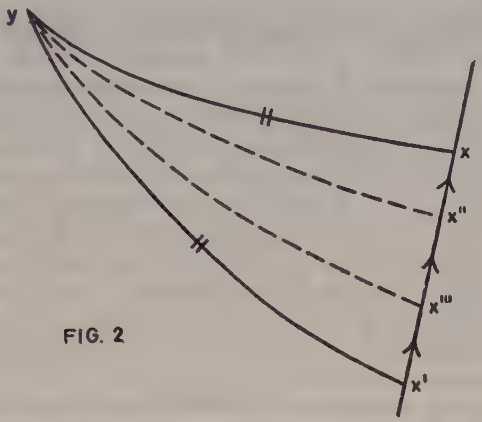

FIG. 2

In Figure 2, $xIyIx'$ but xHx' so that xPx'. Professor Houthakker (and presumably Professor Samuelson ; cf. [8], pp. 368–71) would insert x'' and x''' such that $xHx''Hx'''Hx'$, saying that $x'''PyPx''$, although $x''Px'''$, so that $P2$ is violated. But the assertions that $x'''Py$ and yPx'' depend on $P5$. If we let all the points on the line xx' be indifferent to y we certainly have non-transitive indifference; this violates $P5$ (indeed, Theorem 1 says that $P1$ and $P5$ imply $P4$)—but it does not violate $P2$.[1]

6. $P5$ seems to have a better claim than $P2$, therefore, to be regarded as the central proposition of the theory of consumers' behaviour. In addition to the foregoing arguments, it can be shown [3] that $P5$ is necessary and sufficient, given $P1$ and $P3$, to justify Professor Hicks's definition of revealed preference, which does not involve the assumption that the chosen batch is preferred to all rejected batches ([4], Ch. V). Given $P1$ and $P3$, the assumption of non-saturation, and the assumption that $\Sigma p^x (q^x - q^y) \geqq 0$ implies not yPx, then if and only if we assume $P5$ can we deduce from $\Sigma p^x (q^x - q^y) > 0$ that xPy. The argument of the present paper would need to be modified only in minor details if we were to adopt Professor Hicks's "weak" definition of revealed preference.

But in a system of interrelated propositions such as this, is any useful purpose served by selecting any one axiom as fundamental? It may well be that $P2$ is the most fruitful axiom for the deduction of meaningful theorems on consumers' behaviour (i.e. *necessary* conditions of a complete and consistent system of preferences), but this would give it no priority over $P1$ and $P3$ as *the sufficient* condition for such a system of preferences, even if $P1$, $P2$ and $P3$, together with assumptions of continuity, were sufficient ; and we have seen that they are not.[1]

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[1] In the case of strong ordering, where no two distinct batches are indifferent to each other, the transitivity of indifference is trivial. xIy here implies that $x = y$ so that $xIyIz$ implies $x = y = z$. From xIy and $y = z$ it then follows automatically that xIz. $P1 - P3$ are then the full set of conditions for a complete and consistent system of preferences.

7. We are now in a position to comment on Professor Samuelson's "open question" ([9], p. 9). He accepts Professor Houthakker's view that $P2$, interpreted in terms of the extended definition of revealed preference, is sufficient for integrability. The general form of $P2$—the Strong Axiom—is that for all n, if $\Sigma p^a\, (q^a - q^b) \geqq 0$, $\Sigma p^b\, (q^b - q^c) \geqq 0, \ldots \Sigma p^{n-1}\, (q^{n-1} - q^n) \geqq 0$, and at least two of $a, b, \ldots n$ are different, then $\Sigma p^n\, (q^a - q^n) > 0$. An important special case is the Weak Axiom referred to above : if $\Sigma p^a\, (q^a - q^b) \geqq 0$ and $a \neq b$, then $\Sigma\, p^b\, (q^a - q^b) > 0$. Now $P2$ is a *necessary* condition of a complete and consistent (i.e. an integrable) system of preferences. The Strong and Weak Axioms are therefore also *necessary* conditions of integrability, and Professor Samuelson has deduced from the latter important meaningful theorems on consumers' behaviour ([7], pp. 111–115). For this reason I am puzzled by his search for a " theorem stating the minimum number of situations that will serve to refute a non-integrable preference field in n dimensions " ([9], *loc. cit.*). The minimum number is two in any number of dimensions—the number required to reveal a violation of the Weak Axiom.[2]

But Professor Samuelson also says :

> . . . we know that every non-integrable preference field will display . . . a contradiction [of the Strong Axiom] to the investigator who is patient enough to take enough observations close enough together (*loc. cit.*).

Now this is an entirely different matter from that discussed in our last paragraph. It is here asserted that the Strong Axiom is a *sufficient* condition for integrability. From this assertion no meaningful theorems whatever concerning consumers' behaviour can be derived.

The theorem for which Professor Samuelson is searching must be concerned with the minimum number of situations necessary to *establish* integrability, not to *refute* it. Now we have argued above that the Strong Axiom is not sufficient to establish integrability. Professor Samuelson's theorem, however, appears to be related to a question recently raised by Professor Hicks. The latter conjectures that in the two-commodity case, the satisfaction of the Weak Axiom by all pairs of batches ensures that the Strong Axiom is satisfied by chains of all lengths ([4], pp. 52 – 54).[1] It is known that in more than two dimensions this is not the case (cf. [4], pp. 110–1). It may be possible to show that in *n* dimensions the satisfaction of the Strong Axiom by all chains of a certain finite length ensures its satisfaction by all chains of all lengths.

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[1] As an example of an alternative arrangement of the propositions of the theory, we may cite Mr. Wagner's recent paper [10]. He *defines* a relation of equivalence in such a way that it is transitive, reflexive, and symmetric, and his axioms then enable him to prove that if x and y are equivalent, neither is preferred to the other (Theorem 15, p. 464). This corresponds to our $P1$, with " if and " omitted.

[2] The notion of " integrability " is of course particularly bound up with the particular proposition $P4$, asserting the transitivity of indifference (cf. [8], *passim* ; [11], pp. 90 ff.). I fail to see what value there would be, however, in a meaningful proposition derived from $P4$ alone, if $P4$ could be refuted only by a large number of observations of the same type as those of which only two are required to refute the Weak Axiom, and therefore to refute $P2$.

If such a theorem could be proved, what would be its significance? Since it would in no way assist in the deduction of meaningful theorems, its interest would lie only in the light it shed on the logical structure of the theory. Now if the Strong Axiom were in any sense the sufficient condition for integrability, such a theorem would enable us to substitute for the Strong Axiom, as the sufficient condition, the axiom that the Strong Axiom is satisfied by all chains of the required minimum length. Since this paper has been devoted largely to the dethronement of the Strong Axiom, we conclude that the theorem in question would have very little importance.

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[1] Mr. Newman's proof of this proposition ([6], pp. 167–8) is incomplete, for reasons given by Professor Hicks ([4], p. 54 n.).

A Re-appraisal of the Principles of Resource Allocation[1]

By E. J. Mishan

A rejection of the theories of welfare economics carries with it the judgment that there is at present no rule or method by which we may judge of the relative efficiency of alternative forms of economic organization; indeed, that any conceivable set of production plans or any conceivable set of prices, no matter how arbitrary, are—in our present state of knowledge— to be considered as good as any others.

Few economists, even among those who are wont to treat welfare economics with extreme scepticism, will go as far as this to avoid courting the subject while economists of the liberal school who talk of a presumption in favour of the market mechanisms must, if they are to rationalize this presumption, invoke some theory of welfare. Put at its bluntest then it is in pursuit of an answer to the question, by what lights are we to distinguish between a good allocation and a chaotic one, that we are led willy-nilly into the domain of welfare economics.

Notwithstanding the logic of this conclusion a great deal continues to be written concerning economic efficiency which deliberately eschews the language of welfare economics, relying instead on apparently more acceptable criteria—for instance, the ‘ common sense ’ rule that total receipts should be able to cover total costs supplemented, perhaps, by rules about marginal equalities. For the abiding impression seems to be that by confining oneself to the traditional rules governing the allocation of resources one somehow circumvents the tenuous concepts and fine paradoxes of welfare economics. After all, there are critiques and counter-critiques of welfare economics and in the process a great deal of smoke and subtlety is generated. But the principles of resource allocation are of more solid stuff. They are ever with us and in continual application.

This view, however, does not bear close examination. A by-product of this paper will be the demonstration that certain familiar welfare criteria and the so-called optimum conditions of resource allocation are raised on the same foundation: they stand or fall together. In fact the relationship is so close it is almost inevitable that allocative criteria be examined by the techniques which have proved so popular in welfare economics.[1]

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[1] I am indebted to Mr. Ralph Turvey on whose advice I have removed a great deal of controversial and difficult material from a previous draft thereby increasing the readability and relevance of the present paper, to Professor James Meade for several important suggestions and to Mr. Richard Lipsey for valuable and detailed criticism.

II

It is hard to exaggerate how fundamental is the idea of resource allocation in the theory and application of economics. If competition or unimpeded international trade or mobility of capital and labour are good things this is so, we are given to understand, because they are conducive to allocative efficiency. For opposite reasons monopoly, tariffs, price controls and most kinds of taxes are bad things. And if these judgments have been attacked the attack has not been levelled at the allocative principles on their own ground so to speak. Rather it is the relevance of these principles to the real world, the world of uncertainty, flux, and growth, that has been brought into question. Adjustments which may be demanded by allocative criteria alone, it is argued, may interfere with the more important factors making for growth.[2] Furthermore, to speak of resources being organized to meet the wants of the community is somewhat fanciful in view of the opinion that in advanced economies, at least, consumers may be persuaded to want almost anything if enough resources are devoted to the task of persuasion.

Weighty as these criticisms are I wish to make it plain from the start that my concern is with the narrower but less controversial aspect: with the validity of allocative criteria within their own limited framework. Let us be certain what this framework encompasses. First, an unchanging population of " rational " and " responsible " beings. Rational in two senses, (a) that the choices made by each individual in any situation are consistent with all his other choices and (b) that the wellbeing of the individual depends only on his own real income and not at all on those of others. Responsible in that each individual is taken to be the best judge of his own wants. Clearly both senses of rational are simplifications which may or may not be generally true, while individual responsibility is an ethical judgment without which nothing may be said about allocation. Furthermore—in order to ease the exposition but not necessary for its conclusions—the factor endowment of the economy is fixed[3] as also is the number of finished goods in the economy.[1] Arbitrary assumptions are usually made in order to deal with the government as a supplier of goods and services.[2] But since our conclusions do not depend in any way upon such assumptions we will confine our attention to the market sector of the economy. Uncertainty, which gives rise to theoretical difficulties at many points, is conceded to be the preserve of dynamics, and is therefore excluded from an analysis which is basically static.

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[1] To those who have followed the development of the New Welfare Economics it can hardly be surprising that resource allocation should be linked with, and capable of being tested by, welfare criteria. If allocative criteria have managed to survive unscathed despite difficulties in formulating unambiguous welfare criteria the explanation is surely that the connection between the two, though apprehended, has not yet been made explicit.

[2] For some very forcible arguments in this connection see chapter 12 of Schumpeter's *Socialism, Capitalism and Democracy* (London, 1943). For a recent attack on allocation economics see P. Wiles, " Growth versus Choice ", *Economic Journal*, June, 1956, also a comment on this article by K. Klappholz in the same journal for June, 1957.

[3] Investment and saving can be, and often are, brought into the scheme of things since allocation has a time as well as a space dimension. We do not introduce it here simply because we are interested in testing the validity of the basic principles of resource allocation and not in their extended application.

As to ethical presuppositions, other than individual responsibility already mentioned, we shall follow tradition in stating that the community as a whole is better off if at least one person is made better off and no person is made worse off.

We now proceed to enquire whether, within the confines of our assumptions and simplifications, a movement toward an optimum allocation of resources, defined with reference to the familiar marginal equalities,[3] is an actual improvement for the community in this sense.[4] If it is not an actual improvement is it, we ask, a *potential* improvement in accordance with the definition advanced in the New Welfare Economics: that a situation *II* is to be preferred to a situation *I* if the community as a whole *could* be made better off by a movement to *II*. And in order to answer this question satisfactorily we shall, further, seek to be free from commitment in the matter of distribution—as indeed we ought to be if we are to accommodate the many economists who persistently invoke allocative criteria while shunning the question of better or worse distributions of welfare—by regarding *II* as superior to *I* only if it is a potential improvement over *I* for all conceivable distributions of welfare.

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[1] The introduction of a new good, however, may be treated in its effects on welfare as a reduction in the price of an existing good.

[2] For some interesting controversy over the treatment of government activity see J. R. Hicks, " The Valuation of the Social Income ", *Economica*, 1940, in particular his section 6 on " Public Finance ", and Simon Kuznets, " On the Valuation of Social Income—Reflections on Professor Hicks' Article ", *Economica*, 1948, Part I, Section 3, also J. R. Hicks, " The Valuation of the Social Income—A Comment on Professor Kuznets' Reflections ", *Economica*, 1948.

[3] For a compact treatment of the relevant marginal equalities consult Melvin W. Reder, *Studies in the Theory of Welfare Economics*, New York, 1947, in particular his chapter 2.

[4] The answer, needless to say, is always affirmative if the community consists of only one individual. It is as soon as we have a community of two or more individuals that the problem arises.

In this connection the frequent assumption in the treatment of welfare or allocative problems, that the utility functions of the population are all homogeneous and identical, enable one to reach conclusions which are no more applicable to society than the conclusions arising from the analysis of a Crusoe economy.

This stricture is no less pertinent to ' second best ' solutions which build on this restrictive simplification. In this connection one might consult a recent and very fertile approach by R. Lipsey and K. Lancaster, " The General Theory of Second Best ", *Review of Economic Studies*, 1957, Vol. XXIV, No. 1, where because of the explicit initial assumption of homogeneous and identical utility functions the welfare conclusions reached apply in effect only to an individual but not to society.

Unless, that is, we can find some way of justifying the criteria of an optimum allocation of resources for society all the interesting propositions about monopoly, controls, taxation and trade barriers remain without any acceptable foundations. On the principle of first things first, then, we should seek to establish the apparently elusive rationale of the ' first best ' before pursuing the logic of the second best.

The conclusion of this paper briefly stated is this: that in principle an optimum allocation of resources is neither actually nor potentially superior on welfare grounds to a non optimum allocation of resources. Nevertheless, though an optimum allocation *per se* cannot be vindicated as a norm to be pursued some virtue may be detected in the ' lower level ' optima of exchange and production. If, therefore, one disregards allocative criteria to the extent of trespassing upon these lower level optimum conditions the welfare of the community is liable to be damaged.

In an endeavour to hold the interest of those readers who are not on familiar terms with some of the basic technique of welfare economics the following two sections will be taken up in elaborating the properties of community indifference curves essential to the analysis and in examining briefly the various criteria put forward in the development of the New Welfare Economics. Readers already aware of the power, and limitations, of these constructs may pass on immediately to section V.

III

The need for a welfare criterion of the type now common enough in the literature arises from a consideration of the following sort of dilemma. The definition of an improvement in the collective welfare which commands general assent requires that at least one individual be made better off without any individual being made worse off. However, it is usually recognised that any change in the economic situation all too frequently affects the distribution of welfare in some degree. Consequently an actual improvement in welfare which conforms with the above definition is apt to be a rare event. To accept, therefore, only an actual improvement in this sense would be an extremely frustrating axiom for the welfare economist to adopt.

The formulation of a new welfare criterion by Kaldor and Hicks[1] was the outcome of an endeavour to circumvent this source of frustration by defining an improvement in the collective welfare in such a way as to be independent of the actual distribution of welfare among the individuals. The criterion alighted upon was one which involved a *potential* improvement in welfare: if everyone in the community *could* be better off by moving from an existing situation *I* to a new situation *II*—in other words, if the gainers from the movement to *II* could more than compensate the losers—then the criterion was fulfilled. Accordingly, the movement from *I* to *II* was to be treated as an improvement in welfare regardless of whether or not compensation was paid.

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[1] The criterion was suggested by N. Kaldor in " Welfare Propositions and Interpersonal Comparisons of Utility ", *Economic Journal*, September, 1938, and adopted by J. R. Hicks in his " Foundations of Welfare Economics ", *Economic Journal*, December, 1939.

Soon after the formulation of this criterion Scitovsky proved that it was capable of self-contradiction.[1] Though the gainers might indeed be able to compensate the losers from a movement to *II* and yet remain better off than they were at *I*, this fact did not rule out the possibility that the losers in question might, after the movement to *II*, be in a position to bribe the gainers to agree to return to the *I* situation.

Subtle though this certainly was, it could be cast into a more obvious form and one through which the elusive nature of the apparent contradiction might be uncovered. The Kaldor-Hicks criterion made use of a comparison between two product aggregates *I* and *II* which was based on the distribution of welfare attaching to the *I* aggregate. To apply the Scitovsky reversal test, however, we must compare the two aggregates on the basis of the welfare distribution attaching to the *II* aggregate. The Scitovsky criterion was fulfilled if the result of this reversal test did not contradict that reached by the original Kaldor-Hicks criterion.

If the comparison based on the *II* distribution of welfare did in fact give a result contrary to that reached when the comparison was based on the *I* distribution of welfare then indeed nothing could be said of the potential welfare superiority of either *I* or *II*.[2] Nor should we stop here. For if we are to remain truly independent of all welfare distributions there is no case for confining a comparison of *I* and *II* to criteria based on the particular welfare distribution attaching to each. A truly comprehensive criterion, and the one we shall adopt from now on, involves a comparison of *I* and *II* with reference to *all conceivable distributions of welfare*. This comprehensive criterion is fulfilled if *II* is shown to be superior to *I* for every conceivable distribution of welfare. Unless this criterion is fulfilled the possibility of contradiction is not fully eliminated.[3]

IV

The reason why this apparent contradiction can arise in a comparison between two situations may be made clear with the aid of Fig. 1.

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[1] T. de Scitovsky, " A Note on Welfare Propositions in Economics ", *Review of Economic Studies*, 1941, Vol. IX.

[2] In a later paper, " A Reconsideration of the Theory of Tariffs ", *Review of Economic Studies*, 1942, Scitovsky says (pp. 94–95), " If [the community indifference curves through two given situations] intersect, . . . according to our convention we must regard the two situations as equally good ". This conclusion is hardly acceptable. Unfortunately Arrow, in his *Social Choice and Individual Values*, elected to treat this unwarrantable conclusion as a proposition of the New Welfare Economics (p. 44 ff.) and —manipulating a self-contradictory relationship as if it were instead a transitive one—discovered, not surprisingly, that it led to a self-contradictory conclusion.

[3] That the fulfilment of the Scitovsky criterion—that is, the Kaldor-Hicks criterion and the Scitovsky reversal test both yield the same result—is by itself insufficient to guard against contradiction has been amply demonstrated by W. M. Gorman, " The Intransitivity of Certain Criteria Used in Welfare Economics ", *Oxford Economic Papers*, February, 1955. Given that the relevant community indifference curves intersect, Gorman shows that, with more than two situations to compare, the Scitovsky criterion may be intransitive and, if consistently applied and acted upon, the community may be led into a clear reduction of its welfare. Only the comprehensive criterion is necessarily transitive and free from all possible contradiction.

The point P in the co-ordinate system with origin O fixes the quantities of X and Y available to the community. P may also be regarded as the other corner of the conventional box diagram for these quantities of X and Y which are to be shared between two individuals, J and K. The mutual tangency, and the individual ordering, of the two sets of indifference curves, representing respectively the welfare functions of the individuals J and K, are indicated at several points along the contract curve $ORSP$.

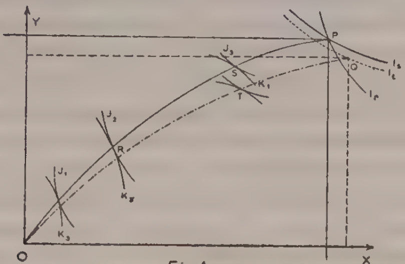

Fig. 1.

Irrespective of the manner of division of the total product P between the two individuals the community indifference curve must, of course, pass through point P. But the *angle* at which it passes through P depends directly on the division between them of this aggregate product. Since at each point on a properly constructed community indifference curve[1]—and therefore also at the particular point P—the rate of substitution of Y for X must be the same for each individual, the locus of efficient divisions of the total product between the individuals is given by the contract curve $ORSP$.[2]

However, for any two points along the contract curve, representing two different divisions of the product P, the rate of substitution of Y for X is, in general, different for both individuals. For example, if we divide the product P between the two individuals in the manner indicated by R on the contract curve, the community indifference curve I_r passing through P (and representing along its length the sum of the individual welfares determined by this division) is parallel to the slope of mutual tangency at R. If, on the other hand, we begin with a division between the two individuals which is indicated by S on the contract curve, the community indifference curve I_s passes through P at an angle parallel to that of the mutual tangency at S.

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[1] For a simple geometric construction of a community indifference map derived directly from individual indifference maps, see my paper, " The Principle of Compensation Reconsidered ", *Journal of Political Economy*, August, 1952.

[2] A division of the product given by a point off the contract curve is inefficient since by exchange both individuals can improve themselves. For the present we shall consider only those divisions of the product traced out by the contract curve. The exchange optimum is therefore fulfilled as indeed it will be in any economy in which each product has only one price and people are free to buy all they want.

In general we may say that the rate of substitution at P, and therefore the slope of the community indifference curve at P, is uniquely determined by the division of the product between the individuals as represented by a point on the contract curve.[1]

If we now introduce another combination of goods, Q, with similar possibilities of division between these two individuals, we can again construct a whole pencil of community indifference curves passing through Q. In order to make a welfare comparison between P and Q we must select two community indifference curves, one passing through P and one passing through Q, that are *comparable* with each other; which is to say that the two curves selected may be regarded as parts of a properly constructed community indifference map—a map in which a higher indifference curve denotes that no individual is worse off and that at least one individual is better off.

This condition of comparability is less restrictive than it may first appear. For any one community indifference curve derived from some particular division of P, such as I_r, there will be many community indifference curves passing through Q each deriving from a slightly different distribution along Q's contract curve, which are directly comparable with I_r.[2] Consequently all these comparable curves will at all points be above I_r. All of them will reveal the same thing, that Q is above P for the community as a whole.[3]

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[1] Paul Samuelson, in his paper " Social Indifference Curves ", *Quarterly Journal of Economics*, February, 1956, rejects community indifference curves simply because, as distinct from individual indifference curves, they do not enable welfare to be determined uniquely from the given amount of the products. They are then, according to Samuelson, not capable of generating group demand or of being of much service in the technique of revealed preference.

Now one can always ' fix ' a community indifference map, making the welfare of the community depend only on the quantities of the goods involved, by using some method such as lump sum transfers in order to maintain constant the initial distribution of welfare. This is in essence what Samuelson's " social indifference curves " amount to. Such a construction, however, is rather a vehicle for by-passing the crucial problem posed by the interdependence of prices and distribution than a device for its investigation.

That is to say, if the community indifference curves have to be constructed with due regard to this interdependence constraint it is not a defect in them but a virtue. Properly understood it makes explicit a relationship which we overlook to our cost, a relationship which plays a key role in this paper.

[2] These curves are not, of course, comparable with one another (since as we pass from one to the other one individual has a little more, the other a little less) but any *one* of them is comparable with I_r. Whichever one we choose to work with, to the exclusion of the others, it will, in a comparison of the two positions, give us the same answer.

[3] Since we shall continue from now on to deal with comparable community indifference curves it may be worth while emphasizing that in moving from a particular community indifference curve to one above that is comparable with it, the only condition to be fulfilled is that at least one member of the community be better off, none being worse off. Thus, a higher comparable curve may entail an improvement for all the individuals in the community, for some of the individuals, or only for one individual, no one being worse off. Having somewhat different distributions of welfare such curves will be slightly different from one another but, as stated, any *one* of them will be comparable with the curve below.

Having chosen one comparable community indifference curve with reference to the one already given, they both form part of a consistent indifference map—indeed, As we cannot legitimately talk of the same or similar welfare distributions existing at different levels of collective welfare[1] we shall, for terminological convenience, speak of any two distributions of welfare from which two comparable community indifference curves are generated as being *comparable welfare distributions.* For the same reason a comparison of, say, P and Q using I_r on the one hand and, on the other, any one of the comparable community indifference curves passing through Q, may be spoken of as a welfare comparison *based on* the I_r indifference curve or, alternatively, a comparison of P and Q *based on* the R distribution of welfare.

Suppose now that the aggregate of goods represented by Q differed from that represented by P in its having one less of Y and one more of X and that we chose to make a welfare comparison of P and Q based on I_r, I_r being the community indifference curve generated from the existing division at R of the product P. If the community's rate of substitution at R, and therefore also at I_r as it passes through P, were $2Y$: $1X$ then I_r is practically sure to pass below Q. On a comparison based on the R distribution then, Q is a better welfare position for the community than P.

If instead we chose to compare P and Q on the basis of the T division of the product Q, I_t is the community indifference curve generated for Q, a comparable one for P being I_s. If with the division T the community's rate of substitution were $2X$: $1Y$ the community indifference curve I_t will almost certainly pass below P. A comparison based on the T distribution of welfare would then reveal P to be a better welfare position for the community than Q.

If P is taken to be the initial situation, and Q the new alternative situation, the Kaldor-Hicks criterion is fulfilled by a movement to Q. For, beginning with the existing distribution, R, everyone *could* be made better off by a movement to Q. Having moved to Q, but compensation not having been paid, the welfare distribution is now that indicated by T. The relative valuations of the two goods are, as a concommitant of the new distribution at T, so changed that once again it is apparent that everyone can be made better off by a movement back to P—I_s being a higher community indifference curve comparable with I_t.

This is the essence of the Scitovsky paradox. And it has been shown that it stems from the interdependence of relative prices and welfare distributions.[2]

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they could, on this principle of construction, form part of many such maps each differing in some degree in the arrangement of the curves above and below this pair. The curves of such a map cannot, of course, intersect.

[1] We cannot, for example, say that in a situation *II* everyone in the community is twenty per cent better off than he was in a situation *I*, and that therefore the distribution of welfare remains unchanged, without admitting cardinal utility into welfare.

[2] It may be noted in passing that if, as in the above example, the *I* situation appears superior to *II* when a comparison is made with the *II* distribution (or, in Fig. 1, if P appears superior to Q when the comparison is made using the distribution pertain-

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The apparent contradiction which can arise with the use of these welfare criteria has, however, been demonstrated only for a comparison of given product aggregates without reference to the conditions under which they are brought into being. If we wish to bring these criteria into relation with the traditional principles governing the proper allocation of resources—which ensure that each class of factor is distributed over the economy so that in all lines of production the value of its marginal product is the same—we must bring the production conditions into the picture.

In taking account of these conditions, however, we may for the present allow that production is efficiently organized; that the rates of substitution between any two factors is the same in the production of all goods in the economy.[1] On the other hand, we have already seen that the use of community indifference curves implies that the rate of substitution between any two goods is the same for all individuals. Therefore, in an economy where all firms maximize profits without recourse to discrimination between individuals and without regard to the supply curves of the factors, the two 'lower level' optima—the production optimum and the exchange optimum—will be simultaneously realized. Granted this much, we can focus our attention on the significance of divergences in the ratios of prices to marginal costs.

What is now to be examined is what we may call an economic *plan*. The plan is identified by a particular aggregate of goods from the many producible with the resources at the disposal of the economy *plus* the differential in the ratio of the product prices to the ratio of their respective marginal costs. For brevity this differential may be referred to as the *price cost ratio*. In diagrammatic terms, whereas the community's aggregate of goods is represented by a point on the co-ordinate system, a plan is represented by the intersection, or tangency, of a community indifference curve with the production possibility curve—the angle between them, if any, measuring the price cost ratio.

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ing to the latter) it may *not* be interpreted as if " potential losers could bribe potential gainers to oppose the change to *II* " as in fact it very frequently is. For this expression turns the apparent contradiction into a real one. It says (i) that individual *J* can bribe individual *K* to make the change to *II* while, *at the same time*, (ii) individual *K* can successfully bribe *J* to oppose the change. Or, in other words, everybody could be made better off (i) by moving to *II* and (ii) by staying at *I*. These are logically contradictory propositions. Both cannot simultaneously be correct.

Stated correctly, the apparent contradiction should read: (i) individual *J* could bribe individual *K* to make the change from *I* to *II*, but (ii) *having made the change to II*, and no compensation having being paid, individual *K* could bribe individual *J* to return to *I*.

[1] It is not necessary, of course, to hold factor supplies fixed to describe a production possibility curve. We need only assume consistent preferences of factor owners as between the alternative types of activity open to them, including leisure. A production possibility curve could therefore be constructed in such a way that at every point along it the additional condition is met that the rate of substitution for any class of factor as between one activity and another is the same for each factor owner at the margin.

Now in the absence of all forms of external economies, the ' ideal ' allocation is said to be found in a situation in which marginal cost everywhere is equal to price or, on our simplification of fixed factor supplies, in which the ratio of price to marginal cost is the same for all products. Any situation, or plan, having this ' ideal ' allocation is commonly spoken of as a complete optimum and is represented diagrammatically by the tangency of the community indifference curve with the production possibility curve.

Can we now compare two optimum plans, such as Q_1, with the community indifference curve I_1 in Fig. 2, and Q_2 with community indifference curve I_2? The answer is no, and the reason easy to illustrate. For if we hypothetically redivide the aggregate product Q_2 in order to derive therefrom a community indifference curve, say I'_2, which is comparable with I_1 in the sense defined, then in effect what is now being compared with the optimum situation at Q_1 is no longer an optimum at Q_2 which has a welfare distribution comparable with that attaching to Q_1, but instead a non optimum plan at Q_2, since I'_2 *cuts* the production possibility curve at Q_2. The same thing happens of course if we try to base the comparison on the I_2 community indifference curve by redividing the product Q_1 between the individuals so as to generate I'_1, a community indifference curve comparable with I_2.

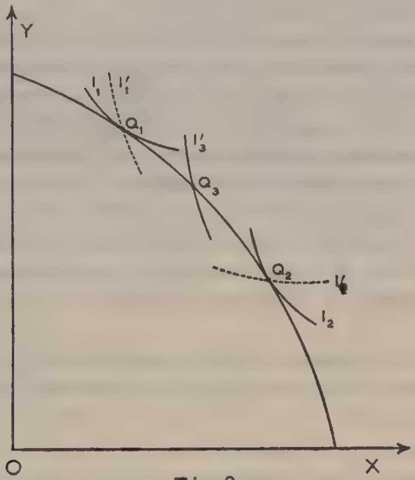

Fig. 2.

We conclude that welfare comparisons between optimum plans is logically impossible: the attempt to make use of such comparisons entails a destruction of the essential characteristic of at least one of the optimum plans—the equality of the ratio of prices and marginal costs.

Moreover, and this is more to the purpose, we can demonstrate by analogous reasoning that, in principle, an optimum plan cannot be made comparable with a non optimum plan and therefore cannot be said to be superior to it. Consider, for example (Fig. 2) the optimum plan Q_1 with the community indifference curve I_1, and the non optimum plan Q_3 with the community indifference curve I'_3. To attempt a comparison of the two plans through the medium of a community indifference map based on the I'_3 curve requires a comparable community indifference curve through Q_1, say I'_1. But this manifestly destroys the optimum characteristic of the plan at Q_1, and therefore vitiates the desired comparison. In a like manner an attempted comparison based instead on the community indifference curve I_1 requires the construction of a community indifference curve passing through Q_3 at an angle differing from the original, in this way contravening the particular price cost characteristic of the non optimum plan at Q_3. Hence it is not possible, in principle, to compare by means of hypothetical compensation optimum with non optimum plans or, for that matter, optimum plans with one another.

The words *in principle* should be stressed, for there may be cases where the community indifference curves initially attaching to the plans to be compared already form part of a consistent community indifference map. Here a direct comparison is possible without invoking the technique of hypothetical compensation (which, as we have just seen, destroys the price cost ratio characteristic of at least one of the plans). Since the two plans are directly comparable—for instance, plan Q_1 with I_1 and plan Q_2 with I'_2—one is actually and unambiguously superior to the other. When, however, two plans are not directly comparable in this way, a comparison of potential welfare is, in the nature of things, impossible.

It is surely at this juncture that we sense acutely the need to answer the question: what virtue resides in an optimum plan that is absent in a non optimum plan ? And the answer will, I think, emerge most clearly if we compare an optimum and a non optimum plan with a particular aggregate of goods common to both—let us say the optimum plan Q_1 with I_1 and the non optimum plan Q_1 with I'_1 in Fig. 3.

Of the optimum plan at Q_1 it may be asserted that, with the particular division of the aggregate Q_1 as summarized in the community indifference curve I_1 at that point, no improvement is possible for both the individuals within the bounds of the given production possibilities, themselves determined by the resources and technology available to the economy. This statement, however, does not hold for the non optimum position at Q_1—that is, for the division of the aggregate product Q_1 which is summarized in the community indifference curve I'_1 at that point, for we can clearly construct a community indifference curve comparable with I'_1 which is an improvement for both individuals and yet is below the production possibility curve along some of its length. One such comparable community indifference curve, I_2, will just touch the production possibility curve at a point Q_2 thereby forming an optimum plan at that point. With this resulting division of the aggregate product Q_2 no further improvement for both individuals is possible.[1]

It is manifest therefore that for each point on the production possibility curve, representing as it does a combination of goods, there corresponds a *unique* distribution of those goods which invests it with the properties of an optimum and therefore a *unique* community indifference curve which determines the pattern of individual welfares.[2]

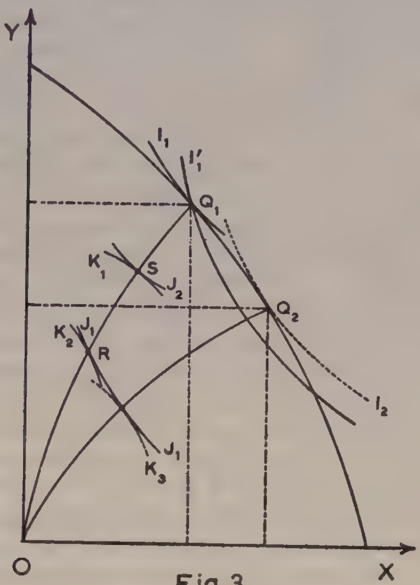

Fig. 3.

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[1] In more detail, I_1 at the point Q_1 in Fig. 3 is parallel with the point of mutual tangency S on the contract curve $ORSQ_1$, the respective welfares of the individuals J and K being denoted by the individual indifference curves J_2 and K_1. I_1 therefore represents the proper summation of K_1 and J_2.

Since I_1 is above the production frontier at all points save Q_1 it is not possible for either individual to become better off without the other becoming worse off.

On the other hand, I'_1 at the point Q_1 is parallel to the point of mutual tangency at R and represents the proper summation of the individual indifference curves J_1 and K_2. But as I'_1 is below the production frontier along part of its length it is obvious that both individuals can be made better off. This is achieved, for example, with the community indifference curve I_2 which is tangent to the production frontier thereby forming an optimum plan at Q_2.

For simplicity of construction, however, I_2 is drawn to represent the special case in which all the improvement in welfare accrues to the individual K, individual J remaining as well off but no better off than before. Thus I_2 becomes the proper summation of J_1 (whose extension across the contract curve pertaining to the product Q_2 is possible inasmuch as the origin of J's indifference map at O remains unchanged) and K_3 (measured from individual K's new origin at Q_2), where K_3 is of course above K_2.

[2] It may well be emphasized that an optimum has a sensible and precise meaning but one *inseparable from the distribution of welfare.* Any point on the production

We conclude therefore that so long as we have no rule for the ranking of welfare distributions (a) comparisons between optimum plans are not possible and (b) comparisons between optimum and non optimum plans are, in general, not possible. They are not possible because whenever the distribution of one of the plans has to be altered for the purposes of comparison—welfare distribution being inseparable from relative prices—the identity of one of the plans is destroyed. (c) If the optimum and non optimum plans to be compared already form part of the existing community indifference map then the method of hypothetical compensation is superfluous, the optimum being actually and unambiguously superior to the non optimum.

Conclusion (c) is, however, not so much of an exception as it may first appear, not merely because as the number of individuals in the community increases the likelihood of this eventuality rapidly diminishes but because of our aim to be neutral as between different welfare distributions. If, from an existing non optimum plan we move directly to a comparable optimum plan, everyone being better off, this improvement in welfare is unambiguous for the existing distributions of welfare. For other distributions of welfare the previously optimal plan is a non optimum plan and, as such, it will be actually inferior to some other plans, optimum and non optimum; which is to say, once more, that only by abandoning the endeavour to be neutral in the matter of welfare distributions—or, more positively, by selecting one reachable distribution of product quantities above all others available from the given resources—can we define an unambiguous optimum position.

The full force of these conclusions must now be apparent. Far from an optimum allocation of resources representing some kind of an ideal output separable from and independent of interpersonal comparisons of welfare, a particular output retains its optimum characteristics

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frontier may qualify for an optimum position, each of such optima being tied to a particular distribution of the quantities of goods represented by that point.

This inseparability has been recognized by Professor Meade in his *Theory of International Economic Policy*, Volume 2. On page 76, for instance, he writes, " Efficiency demands that the production programme should match the distribution of income which is judged proper on grounds of equity. The two sets of considerations cannot be separated ".

Certainly there is no inconsistency in Meade's concern with allocative efficiency for he explicitly admits interpersonal comparisons. Thus there is in his system of welfare an ' optimum ' distribution of welfare.

In strict logic, of course, we cannot select an ' optimum ' distribution of welfare as an *a priori* concept without invoking cardinal utility, for the choice of distribution is constrained by the possibilities provided by the range of optimum allocations. In other words, we can only compare the actual quantities distributed among the individuals for each point on the production frontier when each point is treated as an optimum. Having chosen among the various distributions of goods among the individuals that which we judge to be most desirable, we have effectively isolated the optimum position for society compared with which all other possibilities are unambiguously inferior.

Nevertheless, any change in tastes or in resources nullifies this ideal position and once again we have to choose among the new range of optimum positions for the most desired distribution of the product quantities.

only in so far as we commit ourselves to the particular welfare distribution uniquely associated with it. *If, therefore, we insist on eschewing interpersonal comparisons of welfare the logic of choice impels us to be indifferent as between ' good ' and ' bad ' allocations of resources.*

To those who, like myself, do not at first take kindly to these conclusions some additional persuasion may be necessary. Let us then turn aside from the price cost constraints imposed by allocative criteria and briefly reconsider the matter in the light of the more familiar welfare comparisons. Toward the end of section III we stated that in order for our results to be truly independent of welfare distributions we were required to employ the comprehensive criterion which would define *II* as an unambiguous potential improvement over *I* if, for all conceivable distributions of welfare, *II* proved to be superior to *I*.

Now in a comparison of the two particular product aggregates in section IV we illustrated the possibility of alternative welfare distributions giving contrary results. If we now introduce the constraint that the product aggregates to be compared are points on a production possibility curve contrary results are certain. Therefore the comprehensive criterion can never be fulfilled. For there will be always, at least, two sets of comparable community indifference curves which give contrary results. One set will be based on a welfare distribution yielded by the community indifference curve which passes through one of the two points at a tangent to the production possibility curve—say I_2 in Fig. 3. The other set will be based on the welfare distribution which is derived from the community indifference curve tangent to the production possibility curve which passes through the other point—say I_1 in Fig. 3. These two sets of community indifference curves will always intersect, one set based on I_2 revealing Q_2 to be superior to Q_1, the other set based on I_1 revealing Q_1 to be superior to Q_2.

It follows—provided we do not opt for any particular pattern of welfare—that no one of these possible combinations of goods represented by the production possibility curve is unambiguously potentially superior to any other. But each one is superior to all others for some distribution.

Only by preferring above all others, on account of the welfare distribution it entails, the community indifference curve passing tangentially through a particular point on the production possibility curve can we avoid contradiction, since we thereby commit ourselves to *the* optimum; that is to say, only an indifference map built around our chosen community indifference curve has a right to be considered, all other indifferent maps built around other tangential community indifference curves being irrelevant. Hence, to repeat our conclusion, there can be no proper allocation of resources independent of a judgement as to the best distribution of welfare.

VI

The conclusions reached in the previous section may indeed give us pause, for the principles governing the proper allocation of resources, and therefore the notion of an optimum, have long enjoyed an unshakeable eminence in the theory and application of economic policy. As was suggested at the beginning of the paper, if they were challenged at all the challenge was directed toward their restrictive assumptions. Granted these assumptions, however, and due allowances being made for divergences between private and social costs, equalizing the marginal conditions was the accepted and apparently inescapable formula.

What is left of this formula? If there is now nothing to choose between an optimum and a non optimum situation are we to go on to say that any arbitrary system of quantities and prices are as good as any other? Fortunately this is not the case. Though the top of the edifice, the complete optimum, has been shown to be illusory the lower levels of optima are fairly substantial. In particular, the exchange optimum which we required for the construction of the community indifference curves and the production optimum which was necessary for the construction of the production possibility curve may be vindicated, the former completely, the latter partially.

In regard to the exchange optimum, if individuals place different relative valuations on the same range of goods, some at least can profit by exchange until the rate of substitution between pairs of goods is the same for each individual in the community. Irrespective of the distribution of welfare, a movement to or toward an exchange optimum is an unambiguous *actual* improvement in the welfare of the community. In other words, some people will always be better off—and none will be worse off—if exchange between individuals of their initial product endowments is permitted.

As for the production optimum, this in general is less certain. Within limits it fulfils the comprehensive criterion. For if it is not fulfilled—if the ratio of the marginal physical products is not the same in all lines of production—then we are at a point inside the production possibility curve, say at q in Fig. 4. Any combination of X and Y on the segment of the production frontier between Q_1 and Q_2—the segment contained in the quadrant north-east of q—represents a net addition to output without additional sacrifice by the community. Hence for *any* conceivable welfare distribution existing at q and a comparable distribution of any product combination along the segment $Q_1 Q_2$ the latter combination yields a higher welfare for the community. This is clear common sense since, starting from *any* distribution, some additional products can be distributed to make all or some of the individuals better off without making anyone worse off.[1]

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[1] To put the matter diagrammatically, consider the production-optimum output Q_1 (Fig. 4) as divisible between individuals J and K, and examine the extreme case in which the whole of the output Q_1 accrues to the first individual. His preference for X over Y being stronger than that of individual K, the community indifference curve passing through Q_1—in effect the indifference curve of individual J—is as flat as it can be at Q_1, any subsequent distribution in favour of K entailing an anti-clockwise movement about Q_1 of the community indifference curve. Even if it were perfectly horizontal about Q_1 it must pass above q and, therefore, above the comparable community indifference curve passing through q. An analogous argument holds

Provided, then, that a movement to, or toward, a production optimum is one which entails the production of more of one good without reducing the production of another the new output will be unambiguously *potentially* superior to the old output. It need hardly be added that the further removed is the economy from the production optimum the greater is the scope for unambiguous potential welfare improvements.

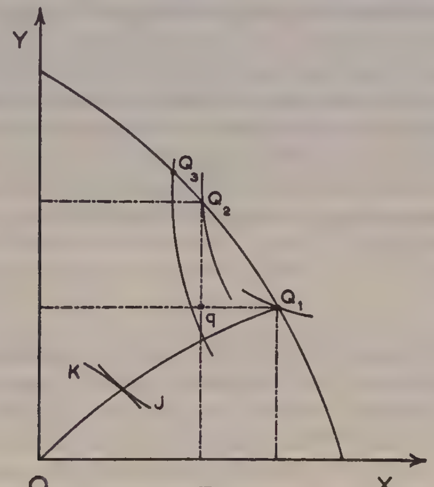

Fig. 4.

To sum up, we began our enquiry by affirming that all questions concerned with allocation economics lay within the domain of welfare economics and therefore could be treated with and tested by the techniques evolved in welfare economics. Starting, therefore, from a widely acceptable definition of an improvement in the collective welfare—that the community is better off if no one is worse off and at least one person is better off—we proceeded to enquire whether a movement toward an optimum allocation of resources results in an unambiguous improvement either in the *actual* or in the *potential* welfare of the community. We concluded (1) that an exchange optimum is perfectly

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for the community indifference curve passing through Q_2 at the northern tip of the segment. Even if all the product accrues to K, the community indifference curve—in effect the indifference curve of K—passes above q and, therefore, above the comparable community indifference curve passing through q. Consequently, any other community indifference curve which may be generated through points Q_1 or Q_2, or through any points on the segment $Q_1 Q_2$, will *a fortiori* pass above the comparable community indifference curve passing through q.

If, however, we move outside the $Q_1 Q_2$ segment we can no longer ensure this result. If, for example, in equalizing the ratio of the marginal physical products of the relevant factors we move from q to Q_3, a point on the production frontier at which a lot more of Y but a little less of X is available than at q, it is possible to conceive of an extreme distribution—say all, or almost all, of the product accruing to individual K—such that the community indifference curve generated will pass below q, as in Fig. 4, and therefore below any comparable community indifference curve passing through q.

reliable. From any non optimum position at this level individuals who avail themselves of exchange opportunities will better themselves without harming any one else. A movement to, or toward, an exchange optimum is therefore an unambiguous actual improvement in the welfare of the community. (2) A production optimum is less reliable. A movement to or toward an optimum production point is an unambiguous potential improvement with certainty only if the movement toward the optimum entails an increased production of at least one good without reducing the production of another good. (3) Granted that the exchange and production optima are achieved, the ' top layer ' optimum, reached by equalizing the ratio of prices to marginal costs, is in general no improvement actual or potential as compared with a non optimum position. Failing interpersonal comparisons, no optimum at this level is superior to a non optimum. Put otherwise, in a non interpersonal welfare economics there is no case for equalizing the ratios of prices and marginal costs.

VII

Many propositions in economics require modification in the light of these conclusions. For instance, monopoly may continue to be condemned for various reasons but no longer for the reason that in an otherwise competitive economy it causes a malallocation of resources. More generally, it can no longer be maintained that an aggregate output in which the ratio of prices to marginal costs is the same for all products is in any way ideal, or to be preferred on welfare grounds to an aggregate output in which this ratio differs from one product to another.

As another instance, the long controversy between the welfare effects of direct and indirect taxation now takes a new turn, and it may be of general interest to describe this briefly before ending.

Since we are to be concerned with the *excess* burden of taxation we may follow custom and suppose that any tax the individual pays is directly refunded to him. If then after the tax the community as whole, on any chosen criterion, is worse off the method of taxation imposes an excess burden.

On the basis of partial analysis it was for some time widely believed that indirect taxation imposed burdens on the economy from which direct taxation was free. About a decade ago the question was reopened by several economists, among them Henderson,[1] who demonstrated that direct taxes imposed a welfare burden on the individual inasmuch as he would be better off if, instead, the same amount were collected by a poll tax. Nevertheless, argued Henderson, indirect taxation was worse still, for it was equivalent to an income tax with its concommitant loss of welfare *plus* an additional loss of welfare arising from the tax-distortion of product prices.

[1] A. M. Henderson, " The Case for Indirect Taxation ", *Economic Journal*, 1948.

Three years later, Little[1] attempted to prove that, in general, there was nothing to choose as between direct and indirect taxation. Illustrating his thesis with three goods, two products and leisure, he pointed out that an income tax, inasmuch as it raised the price of income relative to that of leisure, in effect raised the prices of the two products relative to that of leisure. There was no essential welfare difference between this effect and that of an indirect tax on either or both of the two products.

However, an investigation of the welfare effects of taxation on the individual may yield results different from those which arise when we re-examine the matter at the community level, for it is at this level that relative prices and welfare distributions are interdependent.

If we remove the assumption of fixed factor supplies and assume that no institutional rigidities prevent the individual from equating his rate of substitution between leisure and X and Y to the resultant market rates of exchange between these three goods, the production possibility curve for products X and Y which emerges may be viewed as the cross section, at a certain level of leisure for the community, of a three-dimensional production possibility surface, any point on which indicates a combination of total X, Y, and leisure available for distribution among the community. This total amount, or level, of leisure is, of course, determined along with the total amounts of X and Y by the point at which the community indifference surface touches the production possibility surface.

An indirect tax on X alone, or on X and on Y, alters for each individual the preferred pattern between leisure and the quantity of X and of Y consumed. A direct tax on income, being an equi-proportional tax on X and Y does the same thing. Either tax moves the economy to a new aggregate combination of X, Y, and leisure. In this new position, however, the community indifference surface *cuts* the production possibility surface in a manner which reflects the divergences between marginal costs and the new market prices. Either tax position has the characteristics of a non optimum position.

Formally, then, the argument moves on lines parallel to those of Little. The conclusion we reach does not contradict that of Little, though it is more radical. The interpretation of this formal similarity is, however, quite different. Since Little was dealing with a single individual he constructed a unique indifference map and derived a unique optimum. Both direct and indirect taxation took the individual to essentially similar suboptimal points and were therefore equally indictable on welfare grounds. A poll tax, or a tax on earnable capacity, did not move the individual from his optimum and was therefore clearly preferable.

If we turn to consider the community as a whole, any direct or indirect tax not only causes a divergence between marginal costs and prices of some or all of the products, but concomitantly alters the distribution of welfare among the individuals. In general the new community indifference surface which cuts the production possibility surface is not comparable with the initial community indifference surface. Once again, therefore, we are constrained to employ the method of hypothetical compensation in order to compare the two positions. We have already demonstrated, however, the impossibility of comparing, in general, non optimum and optimum positions at the highest level or, put more strictly, the impossibility of having any optimum unambiguously potentially superior to any non optimum position.

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[1] I. M. D. Little, " Direct versus Indirect Taxes ", *Economic Journal*, 1951.

In the absence of interpersonal comparisons and provided, as we have assumed, that all taxes leave us somewhere on the production possibility surface, we cannot on welfare grounds justify any choice as between a poll tax, a direct tax, an indirect tax or no tax at all.

The London School of Economics.

Sir William Ashley as ‘Socialist of the Chair’

By Bernard Semmel

William James Ashley was one of a small band of pioneer scholars—William Cunningham, W. A. S. Hewins, H. S. Foxwell, and H. J. Mackinder were others—who constituted the English “ school ” of economic history at the turn of this century. The efforts of this group were overshadowed by those of the German historical school which, first under the leadership of Wilhelm Roscher and then of Gustav Schmoller, devoted more attention to theoretical problems and questions of methodology, was more far-ranging in acquiring and utilizing other departments of knowledge, was considerably more prolific, and had even become a force in German political life. The English school cannot, however, be set down as a mere offshoot of the German; it was of native growth and worked independently, turning its attention to a rather different type of problem. Ashley, alone of the leading English economic historians, belonged not only to the school of Adam Smith, Thorold Rogers, and Arnold Toynbee, but also to the German school of historical economists whose historical, statistical, and inductive method had been brought to England in the ’seventies and ’eighties by Cliffe Leslie and J. K. Ingram and posited against the abstract, deductive method of the followers of Ricardo and Say.

Ashley began his career at Oxford, as a History Scholar of Balliol, in 1878. There his interests were formed under the influence of Toynbee, Stubbs, and Maine. He took a First in History in 1881 and remained at Oxford for several years as a private tutor. In 1888, he was invited to occupy the chair of political economy and constitutional history at Toronto where he did much to stimulate the work in economic history which has since been associated with that university. In 1892, Ashley accepted President Eliot’s invitation to come to Harvard to occupy the first chair in economic history in the world. Nine years later Ashley returned home to become professor of commerce at the new University of Birmingham, helping to organize the first university school of commerce in the United Kingdom.

Ashley had brought to Toronto and to Harvard not only the latest word concerning the study of economic history in England; he was a representative as well of the German school of historical economists. Schumpeter has described Ashley as conforming “ more than any other English economist to the German professional type of that time”.[1] Ashley maintained close ties with the German academic world. He was a regular correspondent of two of the leaders of the so-called

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[1] J. A. Schumpeter, *History of Economic Analysis* (New York, 1954), p. 822n.

"younger" historical school—Gustav Schmoller and Lujo Brentano.[1] He dedicated one of his books to Schmoller, assuring the professor of political economy at the University of Berlin that "I feel that for a dozen years I have received more stimulus and encouragement from your writings than from those of any other".[2] Schmoller responded and graciously complied with "my friend" Ashley's subsequent request to write an introduction to his daughter's study of the social policy of Bismarck.[3] Ashley was the only English contributor to the *Festschrift* presented to Schmoller on his seventieth birthday;[4] in 1910, he was awarded the Honorary Doctorate of the University of Berlin, a distinction, his daughter has informed us, "he was then most certain to prize".[5]

The conviction of the German historical economists that history could serve as a guide for the formulation of policy had found expression in the formation of the *Verein für Sozialpolitik*—a society Ashley was to describe as the historical school become militant.[6] In so far as the *Verein* had a common programme, it consisted of a rejection of the individualistic doctrines of Manchester and a reliance upon the state as the guardian of the national welfare. With minor exceptions, all the members of the *Verein* were nationalists, monarchists, and protectionists. From about 1890 until his death in 1917, the dominating influence in the *Verein* was Gustav Schmoller, whose social-politics may be described as "reformist" state socialism and much of whose analysis resembled that of Karl Marx.[7]

Like Marx, Schmoller—writing in his famous *Grundriss*, which Ashley regarded highly[8]—did not doubt the existence of "contradictory" class interests and acknowledged the inevitability of class conflicts. Furthermore, again like Marx, Schmoller believed that legal institutions had been designed by the "higher economic classes" to favour themselves. Such circumstances led to "class abuse" and "class dominance", which Schmoller judged as "degeneration" since it was "a part of the essential idea of the sovereign power that it is to be used in the interest of the whole society, not in the special interest of a class ". Class dominance led to revolution and it was therefore in the interest of every state to protect the weaker classes. Class abuse could be reduced by a bureaucracy of high standards, standing above the class struggle, and by a vigilant, informed public opinion. To limit class abuse, to wean the working man away from the influence of the revolutionary demagogue and to educate him in the ways of practicable reform, Schmoller and the moderate members of the *Verein* called for state action to protect trade unions, to promote factory legislation, to encourage collective bargaining and arbitration, and to enact such social reforms as national insurance. The *Verein* has been credited with having helped to formulate Bismarck's insurance scheme of the 'eighties.

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[1] Some of Ashley's letters to Brentano have appeared in the *Journal of Economic History*, XV, No. 1, 1955, pp. 34-43.

[2] William Ashley, *Surveys Historic and Economic* (London, 1900), dedicatory page.

[3] Anne Ashley, *The Social Policy of Bismarck* (London, 1912), Birmingham Studies in Social Economics, No. 3, p.v.

[4] W. J. Ashley, "The Present Position of Political Economy in England", in *Die Entwicklung der deutschen Volkswirtschaftslehre im neunzehnten Jahrhundert* (Leipzig, 1908).

[5] Anne Ashley, *William James Ashley: A Life* (London, 1932), p. 144.

[6] W. J. Ashley, "Socialists of the Chair", in Sir Robert Palgrave, editor, *Dictionary of Political Economy* (London, 1912-15), III, pp. 437-438.

[7] Light has been cast upon the *Katheder-Sozialisten* by Schumpeter, *op. cit.*, pp. 800-824; illuminating also is Élie Halévy, *Histoire du socialisme européen* (Paris, 1948), pp. 168-170.

[8] See W. J. Ashley, *An Introduction to English Economic History and Theory* (London, 1913), p. xvi. In a prefatory note, Ashley reported that "the spirit and purpose of the German historical economists are now exhibited for our admiration in the great work of Professor Schmoller, *Grundriss der allgemeinen Volkswirtschaftslehre*".

The similarities of interpretation between the historical school and the Marxists were striking, and the *Katheder-Sozialisten*, " Socialists of the Chair ", as the members of the *Verein* were called, took great pains to differentiate themselves by denouncing both Marx's theory of surplus value (the theory of the exploitation of labour which was so crucial in giving to Marxism its revolutionary character) and working class internationalism. Yet certain likenesses persisted: Schmoller even agreed with Marx as to the inevitability of socialism, though he saw its triumph as a consequence of an alliance between socialism and the German " bureaucratic and military monarchy", rather than by revolutionary action of an international proletariat. Schmoller was no defender of capitalism but saw it as a stage in historical development. The programme of the *Verein* was designed to ensure that the following stage would be the outgrowth of peaceful evolution, rather than risk the dangers of foreign domination or military dictatorship which were inherent in revolution. Revolution Schmoller regarded as " always the most precarious of all games of chance ".[1]

A declaration of " economic faith " recorded in a letter which Ashley wrote to his fiancée sometime between 1886 and 1888 corresponded substantially with the opinions of Schmoller and the *Verein*. The form which Ashley employed to describe his faith was itself significant: he constructed a list of those points of Marxist doctrine with which he agreed and those with which he disagreed. Ashley first described his differences with the socialists. (a) He believed that the theory of surplus value was false. (b) " What they expect in ten years, I think *possible* in 100 ". (c) He wished to emphasize the vices of all classes, not only those of the capitalists. (d) " What they regard as *obstacles* to *immediate* carrying out of socialist changes, I look on as *educating* influences towards a socialization . . . far in the future; such as factory legislation, trade unions, co-operation, wisely administered poor-law, sanitary aid, etc." He believed revolutions " for the present and for the next fifty years probably " were " useless and therefore criminal ".

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[1] Gustav Schmoller, *Grundriss der allgemeinen Volkswirtschaftslehre* (Munich, 1923), II, pp. 562-647. (First edition appeared in 1900.) Part of this material has been translated by Albion W. Small : " Schmoller on Class Conflicts in General ", *The American Journal of Sociology*, XX, No. 4, 1915, pp. 504-531; the quotations in the text have been derived from this translation.

Ashley agreed with some of the contentions of the Marxists. (a) He thought their analysis of factory industry correct, believing it the same as that of Ricardo and Cairns: " these argued that, *given certain conditions*, certain results such as the aggregation of capital, the destruction of smaller employers, the lowering of wages down to the standard of subsistence would follow ". For factory industry, these conditions—" complete freedom of competition, superfluity of labourers etc."—are " being progressively realized, and consequently the results are being created ". (b) He believed that the formation of " great companies " accompanied by " the increased importance of the managing director " and the clearer distinction between that part of profit due to skill, and that due to the mere possession of capital pointed toward " ultimate socialization ". (c) He saw in the changing role of the state, as evidenced in the factory acts, employer's liability laws, and the parcel post, a " clear tendency toward socialization ". In matters of practical policy, Ashley wished to organize government works on the basis of a fair rather than a competitive wage and to extend state ownership to railways, waterworks, and gasworks, as well as to increase municipal property in land and houses.[1]

In another letter during this period, Ashley wrote with less hesitancy about the coming of socialism. He did not judge it as just " possible ", he declared that the social organization of production and exchange was " as certain as the rising of tomorrow's sun ". At this time, he called himself an " evolutionary socialist ", and, in private conversation, retained this description of his views throughout his lifetime.[2] In later years, he told friends that his only choice had been to " join the Conservatives and push them forward or join the Labour Party and hold them back ".[3] A proper dilemma for a *Katheder-Sozialist*, and properly resolved by joining the Conservatives.

In one crucial respect, Ashley's early declaration of " economic faith " did not conform to the *Katheder-Sozialist* pattern. The *Katheder-Sozialist*, while admitting the existence of class conflict, desired to have that conflict rendered harmless by such unifying forces as common heredity, language, morality, and religion ; the German economists were " national " socialists. Ashley's upbringing was Liberal: his father, a journeyman hatter of modest means, was a slice of nineteenth century non-conformity—a Baptist, a teetotaler, and a Free Trader. Ashley's background probably left him immune to the rash of nationalism which had infected so many of his associates: we know that he was one of the few Liberal Fellows at Oxford who did not shift party allegiance as a result of the Home Rule controversy.[4]

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[1] Quoted in Anne Ashley, *Ashley*, pp. 34-35.
[2] Quoted in *ibid.*, p. 36.
[3] Quoted in *ibid.*, p. 129.
[4] *Ibid.*, p. 126.

Ashley's stay in North America, however, transformed the cosmopolitan Free Trader into a nationalist and protectionist and thereby a Liberal into a Conservative and Unionist. It was in the United States that Ashley abandoned his father's sect in favour of Episcopalianism, the American branch of the national church which, upon his return to England, he attended faithfully until death. He lived in the United States of the McKinley and Dingley tariffs and in a Canada in which reciprocity with the United States was the key political issue. When Chamberlain announced his programme of imperial preference in 1903, Ashley came actively to his support fearing, as he told J. H. Clapham, that "were nothing done", then "the economic and then the probable political absorption of Canada by the United States was highly probable".[1] While never an expansionist, he became a patriot and an imperialist. He asserted that the attitude which judged "the nation as an indispensable instrument for the ultimate well-being of humanity" was "consistent with a noble idealism",[2] and he regarded the British Empire as "the mightiest of instruments for good" and the "fairest hope of humanity".[3]

The greater part of the Unionist party was soon converted to Chamberlain's Disraelian—and Bismarckian—programme of protection, imperialism and social reform. The Liberal party and the organized labour movement swung into the defence of Free Trade. So, too, did the leading lights of British political economy, Alfred Marshall among them, who signed a petition denouncing the Chamberlain programme as "detrimental to the material prosperity of this country".[4] A few days later H. S. Foxwell wrote a letter to *The Times* noting that "with scarcely an exception, the historical group of English economists declined to sign the manifesto". "The fact", he continued, "I venture to think, goes far to justify the position they hold as to the importance of historical study in economics".[5] Shortly afterward, one by one, the leading British economic historians announced their adherence to Tariff Reform and lent their active assistance to Chamberlain's campaign. The arguments of the economic historians were not widely different from those of the sensationalist tariff press but they gave the tariff cause the kind of intellectual respectability which Free Trade derived from orthodox political economy. The economic historians did however defend the Chamberlain programme from different standpoints. Hewins' position, for example, was that of the iron and steel industrialists with whom he associated upon the new Tariff Commission: he was a fairly conventional industrial protectionist.[1] For Mackinder, the founder of geopolitics, the "key" was power: he saw British predominance threatened by Germany and felt that Tariff Reform would protect Britain's industrial strength and preserve the vitality of her working classes, i.e., her "man-power".[2] Cunningham hewed faithfully to the Unionist party line in his polemics, but, beneath the rhetoric, he rested his position on the more solid base of conservatism's traditional conception of organic, national community, a view built upon Tudor and Stuart paternalism and mercantilism.[3]

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[1] J. H. Clapham, "Sir William Ashley", *Economic Journal*, XXXVII, 1927, p. 681.

[2] W. J. Ashley, "Political Economy and the Tariff Problem", *Economic Review*, XIV, July 1904, p. 264.

[3] W. J. Ashley, "The Argument for Preference", *Economic Journal*, March 1904, XIV, p. 1.

[4] *The Times*, August 15, 1903, 4b. The Free Trade petition-signers were C. F. Bastable, A. L. Bowley, Edwin Cannan, Leonard Courtney, F. Y. Edgeworth, E. C. K. Gonner, Alfred Marshall, J. S. Nicholson, L. R. Phelps, A. Pigou, C. P. Sanger, W. R. Scott, W. Smart, and Armitage Smith.

[5] *The Times*, August 20, 1903, 10c.

Ashley's summing-up of the economics of protectionism was certainly acceptable to the Tariff Reformers—he was widely regarded as "the leading academic defender" of the Chamberlain programme and as "close" to Chamberlain[4]—but his more individual views, especially those on the "social" side, were so eccentric that they had to be ignored.[5] They did not fit into the type of campaign the Unionist party was fighting. For instance, his view that the industrial supporters of Chamberlain were acting from motives of self-interest and that it was necessary for the working class to safeguard the tariff from selfish abuse was most unusual. It was the Liberals who spoke of the "selfish interests" of the manufacturers and the Tariff Reformers who responded by citing the national interest, imperial idealism, and the broadening of employment. Ashley, in most unusual fashion, admitted that Tariff Reform "may open the door to forms of protection that are unnecessary and undesirable", and added that "only a grave sense of the needs of the nation and empire could induce any of us to be ready to face the risk".[6] Ashley discussed the attitude of the German historical school toward the German tariff:

> They have no illusions which blind them to the selfishness of the class interests involved—whether of the great industrialists or of the agrarians; they realize the dangers, but feel that they have to be faced; that for a State to shirk a duty because it is difficult and can only be imperfectly performed, would be to abdicate its essential function.[7]

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[1] W. A. S. Hewins has presented his position in his *The Apologia of An Imperialist* (London, 1929), 2 Volumes.

[2] H. J. Mackinder, *Money-Power and Man-Power: The Underlying Principles Rather Than the Statistics of Tariff Reform* (London, 1906). "Man-Power as a Measure of National and Imperial Strength", *National Review*, XLV, 1905.

[3] Cunningham was especially prolific. See *The Case Against Free Trade* (London, 1911), and *The Rise and Decline of the Free Trade Movement* (Cambridge, 1905).

[4] Clapham, *op. cit.*, p. 681. See Anne Ashley, *Ashley*, p. 127.

[5] In the tariff campaign literature that this writer has read, Ashley's special argument concerning the dependence of national insurance on tariff reform appeared but once, in the *Monthly Notes on Tariff Reform*, September 1907, VII, No. 3, p. 91, published by the Birmingham Branch of the Tariff Reform League. Here it was clearly identified as Ashley's view—a rather unusual procedure, since the arguments of the other economic historians became common currency.

[6] W. J. Ashley, "The Present Position of Political Economy", *Economic Journal*, XVII, December 1907, p. 489.

[7] Ashley, "Political Economy and the Tariff Problem", *loc. cit.*, p. 266.

The British working class must therefore give the tariff a "discriminating support" or it would be responsible if self-seeking protectionists set policy.[1] Selfishness would be minimized by "the pressure of competent and well-informed criticism of particular measures".[2]

On questions of trade unionism and tariff reform, Ashley's views were in striking contrast to those of his colleagues in economic history and in the Unionist party.[3] On this matter, too, he was in agreement with the *Verein*. Gustav Schmoller had, we have seen, described the functions of the trade unions as most necessary ones. Many members of the *Verein*—Brentano is a noteworthy example—devoted themselves to the history of trade unionism.[4] From his earliest years, Ashley regarded the unions in this sympathetic light and displayed the greatest interest in their problems; unions were "the only means" of "remedying social inequalities".[5] At Harvard during the violent Homestead Steel Strike of 1892 and the Pullman Strike of 1894, Ashley became seriously disturbed lest such armed clashes between capital and labour be reproduced in England. He became a leading advocate of unionism both in Canada and in the United States.[6] While at Harvard, he joined the Church Social Union (Episcopal) and, as chairman of its publications committee, prepared a pamphlet on the Pullman Strike which defended the right of the workers to strike in the absence of a system of arbitration.[7]

Ashley urged those who were concerned about the future of trade unionism to consider international trade conditions. German and American steel exports were limiting the profits of British steel manufacturers, he argued, and British producers were already beginning to imitate the anti-trade union activities of their competitors. As international trade rivalry became more and more severe, employers "will demand, and will have a right to get, a freer hand" in order to compete more effectively. If the working class wished to maintain trade unions, Ashley warned, working men had better support Tariff Reform.[8]

If the Tariff Reform programme were not adopted, British manufacturers in their frantic search for markets would, Ashley proclaimed, drive the country to war. British cotton manufacturers had waged war in 1839 in order to maintain their China trade and were capable of doing so again. If the British working man was interested in preserving the peace, the Birmingham economist once again warned, and it was to his interest to do so since the working man would do the actual fighting in event of war, he had better support Tariff Reform.[1]

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[1] W. J. Ashley, "Argument for Preference", *loc. cit.*, p. 9.

[2] W. J. Ashley, "The Present Position of Political Economy", *loc. cit.*, p. 489.

[3] Cunningham, for example, believed that trade union policies were uniformly prejudicial to the national interest and feared the growing power of the unions. See William Cunningham, *Christianity and Politics* (Boston, 1915), pp. 208-210.

[4] Brentano's scholarly reputation was made by his *Die Arbeitergilden der Gegenwart* (Leipzig, 1871-72).

[5] Quoted in Anne Ashley, *Ashley*, p. 55.

[6] See letter of William Ashley to Richard T. Ely, *c.* 1888, Ely Papers quoted i Joseph Dorfman, *The Economic Mind in American Civilization, 1865-1918* (Nev York, 1949), p. 124. See also Anne Ashley, *Ashley*, p. 55.

[7] W. J. Ashley, *The Railroad Strike of 1894* (Cambridge, Mass., 1895), pp. 8–12.

[8] W. J. Ashley, *The Tariff Problem* (London, 1920), pp. 191-192. The book was first published in 1903.

Social reform, too, would accompany the success of the tariff programme, Ashley asserted. This was not an unusual argument; one of Chamberlain's early pronouncements had promised old-age pensions derived from tariff revenues. Ashley's point was different: he did not see social reform as dependent upon the expansion of revenues. German national insurance was " hardly less than a social revolution ", he argued, and Bismarck had only been able to weaken the opposition of German industrialists to insurance by simultaneously offering them a protective tariff. A system of national insurance was possible only " with the acquiescence and co-operation of the employers " and that acquiescence " can only be obtained when British employers feel that they can carry on their operations with a reasonable degree of commercial security ". Social reform and a tariff were not only not inconsistent, Ashley maintained, but, as the German example had demonstrated, the former was dependent upon the latter. " This is a great comfort to those of us who are Social Reformers first and Imperialists afterwards ", Ashley continued, " those of us who, in the present crisis of our national fortunes, are such ardent Imperialists that we are ready to risk even the real dangers of tariffs, and to do this just because we are Social Reformers".[2]

In these arguments to the working class, Ashley had, perhaps unawares, painted his portrait of contemporary capitalism. It was an odd picture for a Conservative: selfish industrialists seeking to pervert national policy to their advantage; a hard-pressed British capitalism, backed into a corner by its rivals, which would not hesitate to smash trade unionism and even to make war in order to better its competitive position; a capitalism willing to share some of the " spoils " of imperial success, in the form of national insurance, in exchange for the working man's support of protection. It was a portrait of capitalism that might have been painted by a Marxist critic—indeed Luxemburg and Hilferding saw capitalism, in its " last stage of imperialism", in much this light.[3] If we turn back to Ashley's early declaration of " economic faith ", we recall his agreement with Marxist analysis of factory industry. He stated then that under conditions of complete freedom of competition—in this instance, the freedom of German and American industrialists to compete with British industry—and of a " superfluity of labourers ", and so on, certain results—" the aggregation of capital, the destruction of smaller employers, the lowering of wages down to the standard of subsistence would follow ". Unlike the Marxists, and in the pattern of the *Katheder-Sozialisten*, he advised not revolution, but class compromise and the blocking of foreign competition by tariffs and preference.

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[1] *Ibid.*, p. 197.

[2] W. J. Ashley, *The Progress of the German Working Classes in the Last Quarter of a Century* (London, 1904), pp. 19, vi-vii.

[3] See, for example, Rosa Luxemburg, *The Accumulation of Capital* (New Haven, 1951), *passim*, and especially pp. 446-453. This book was originally published in 1913. Hilferding's work on finance capital was published in 1910. Ashley, therefore, anticipated some of the points of their more definitive formulations.

Ashley gave much consideration to the growth of industrial combinations while at Harvard. Pre-war England had been less affected by the trust movement than either Germany or the United States, and English Liberal economists associated her comparative freedom from trusts with Free Trade, warning that the adoption of Tariff Reform would end this immunity. Defenders of the tariff appeared to agree with this view and preferred not to deal with this charge. Ashley attacked the problem boldly: for him, as for the Marxists, trusts were no " merely temporary " phenomenon, not simply a consequence of protection, they were an inevitable part of capitalist development. He saw gigantic trusts looming in England's industrial future whether or not protection were adopted. Competition led to crises and unemployment: crises, for Ashley as for the Marxists, were produced " automatically, by the ' normal ' working of the competitive system ". At the present stage of capitalist development, Ashley wrote, the normal crises were made even sharper by—and once more the Marxists would have agreed—" the increasing use of fixed capital ". These crises led unfailingly to industrial combination.[1]

Yet Ashley's attitude toward the trust was hardly Marxist or that of British and American middle-class opinion. He described trusts, in the light of the agonies of competition in America, as " simply an attempt to lessen and, if it may be, avert altogether the disastrous and harassing effects of cut-throat competition ".[2] Schmoller wrote similarly of trusts as both inevitable and, if regulated by statute and guided by informed public opinion, beneficial.[3] Ashley adopted a moral position on the trust which he felt " proceeds from the good side of humanity, the impulse toward mutual assistance and the desire for stability, as well as from the less attractive side, the pursuit of gain ".[4]

Industrial combinations were beneficial to the working class, Ashley asserted. Competition—both internal and external—was driving wages to the subsistence level and was responsible for unemployment. International competition would be restricted by the programme of Tariff Reform. After that, " our main hope must rest," Ashley reported, " in the limitation of internal competition among employers by the growth of capitalistic combination ".[5] Combination would guarantee for the working man that " continuity of employment and steadiness in the rate of remuneration " which were " really more important than temporary high wages ".[1] In one respect, the workers would be disadvantaged. It would be more difficult to bargain with the industrial combination than it had been with the small concern. Ashley's solution was that the working men, too, should form combinations.

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[1] W. J. Ashley, " American Trusts", in *Surveys Historic and Economic*, pp. 378-384.

[2] *Ibid.*, p. 385.

[3] For Schmoller on trusts, see *Grundriss*, I, pp. 537-556.

[4] W. J. Ashley, *The Economic Organisation of England* (London, 1935), pp. 188-189. Originally published in 1914.

[5] W. J. Ashley, " The Present Position of Social Legislation in England ", *Economic Review*, October 1908, XVIII, p. 397.

For Ashley, as for Schmoller, there was no doubt concerning the existence of contradictory class interests. Cunningham and other " advanced " Conservatives, were at this time, backing schemes of co-partnership and profit-sharing.[2] Although Ashley wished social reconciliation not conflict, he rejected as unrealistic all attempts to bring about class harmony which took as their starting point the identity of interest between employer and employee. Trade unionism based as it was on " a solidarity, or community of interest, between all the workmen of a trade, face to face with, if not in opposition to, all the employers of the trade "—that was the true principle and the sound one since it did not attempt to detach employees from " the common interests of their class". Ashley warned employers not to attempt to destroy this principle of unionism. " The weakening of unionism ", Ashley insisted, " paradoxical as it may sound, weakens the necessary basis for industrial peace in the only direction in which it is likely to be secured nowadays, i.e., the direction of collective agreement ".[3]

Ashley puzzled about the form which the national economy of the future would and should take. In discussing the Standard Oil monopoly in the United States, he admitted that development had reached the point where " on the purely economic and administrative side, there could be little objection to the Government taking over the business ", but added significantly, " if only there were a Government politically capable of the task ".[4] The future society he did see was based upon the corporative theories which were being revived and widely discussed on the continent and which Ashley, alone among the English economists, upheld. Ashley believed that the future would see great national organizations of employers engaged in collective bargaining with great national organizations of working men. Such a situation already existed in certain British industries and would become more general. This Ashley regarded as the " natural response " to economic conditions.[5] " Society", Ashley wrote in 1914, " is feeling its way with painful steps towards a corporate organisation of industry on the side alike of employers and employed; to be then more harmoniously, let us hope, associated together—with the State alert and intelligent in the background to protect the interests of the community".[1] It was a natural conclusion for this English *Katheder-Sozialist*, working with tools of economic analysis wielded by the Marxists but toward the non-revolutionary goals of the German historical school.

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[1] Ashley, " American Trusts", *loc. cit.*, p. 386.

[2] See William Cunningham, *The Causes of Labour Unrest and the Remedies for it* (London, 1912), p. 18.

[3] W. J. Ashley, " Profit-Sharing," *Quarterly Review*, CCXIX, 1913, pp. 522, 530, 524, and *passim*.

[4] Ashley, " American Trusts", *loc. cit.*, p. 387.

[5] Ashley, *Economic Organisation of England*, pp. 189-190.

Many of Ashley's arguments to persuade the working class to accept Tariff Reform were bad politics and consequently ignored. British Conservatism eschewed specious theory and turned more naturally to Hewins' industrial protectionism, Mackinder's warnings concerning German might, and Cunningham's " national " economics. Although he acknowledged himself a disciple of German historical economics, Ashley never did publicly call himself a disciple of *Katheder-Sozialismus* as well. Such an admission might easily have further limited his political influence in pre-war Britain. Although Ashley had a much more profound understanding of the importance of orthodox economic analysis than had Schmoller and the German school,[2] it was to the Germans that he owed that special point of view which differentiated him from his English colleagues and it was largely from them that he derived the insights which enabled him to prophesy our present age of oligopoly.

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[1] *Ibid.*, pp. 190-191.

[2] See Schumpeter, *op. cit.*, pp. 822-823n.

Revising Demand Theory[1]

By KELVIN LANCASTER

It is a regrettable thing but unfortunately true, so our lexicographers[2] tell us, that to revise has long since ceased to imply condensation or simplification. The days when Bacon could write proposing " to revise the Romane Lawes from infinite volumes . . . into one competent and uniforme corps of law "[3] seem to have passed.

Professor Hicks, in revising demand theory, has expanded the treatment from the sixty odd pages of *Value and Capital* (which includes the relevant mathematical appendices) to one hundred and ninety-four pages in his latest book. Yet the real content of demand theory has certainly not grown with the years. Not only has the content not grown, but analytical tools have been developed that enable that content to be displayed in a very short space indeed, and Hicks himself presents these techniques in the first, and by far the best, chapters of his book.

Now Hicks is anything but verbose, so it is the more surprising that —since he holds the pruning shears in his very hands—he misses the wonderful opportunity of cutting back demand theory to something like its proper dimensions. Surely, at a point in the history of economic science when it is coming to be realised that very few generally valid conclusions can be derived, after all, from universally acceptable armchair assumptions about the nature of human behaviour, the call is for deflation, not inflation. Yet, in between a brilliantly expounded sixty pages about the very techniques that can reduce demand theory to a handful of crisp and concise chapters, and a final chapter in which he concludes there is little to be said, Hicks manages to write one hundred and twenty pages of saying very little.

In these centre chapters of the book, Professor Hicks seems to have been seduced by the ghosts of Marshall and his followers. They attempted to squeeze the last drop out of demand theory, but they did not realise that they were squeezing a stone, nor that the drops were water and not blood: by now we should all know better.

I

The opening seven chapters of the book are in the best Hicksian tradition. Here is the Hicks of *Value and Capital*, selling the latest analytical tools to the general body of academic economists by the brilliance of his exposition. All of us have bought the older wares— ordinal utility, indifference curves, income and substitution effects, for example[1]: this time he offers the logic of ordering, the nature of preference, consistency tests, and other equally exciting things.

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[1] J. R. Hicks, *A Revision of Demand Theory*, Oxford University Press. 1956. vii + 196 pp. 18s. net.

[2] The compilers of the *Oxford English Dictionary*. The *O.E.D.* gives, as one meaning of revise, " to condense by revision ", but notes it to be obsolete.

[3] Bacon, 1596, quoted in the above *O.E.D.* reference.

If there is room for disagreement with Hicks in these chapters, it is over the way in which these tools are considered to be related to each other and the extent to which they are all considered to be relevant to demand theory proper. Obviously, this depends on how one defines the scope of this particular compartment of economic theory. In the earlier part of the book, Hicks says of his chosen field, " I mean nothing else but the conventional theory of ' utility ' and consumers' choice ".[2] Now these two things (and Hicks keeps them separate) cover a great deal of ground, much of which is Welfare Economics and not demand theory, and welfare economics is specifically kept for a later work.

Although the theory of ' utility ' or preference (essentially concerned with psychological phenomena), and the theory of demand (essentially concerned with economic phenomena) can claim, on historical grounds, to belong between the same pair of covers, it is desirable that their possible logical separateness be made clear. Hicks does not do this, but follows the historically respectable path of regarding the second as being derived from the first. In particular, the consistency idea is regarded by Hicks—and in this he follows Samuelson, its discoverer—as a theorem to be derived from choice and preference criteria.

Now, in the absence of any axioms of any kind concerning human behaviour in a situation of choice under constraint, there is no *a priori* demand theory at all. But why set up a full-dress theory of choice merely to derive the consistency tests ? Why not use the consistency test itself as the axiom of demand theory ? Consider the consistency idea in the following axiomatic form:

Consistency Axiom. If any collection (A) fails to be chosen by a consumer, but collection (B) is chosen, in any situation in which both (A) and (B) are available, then collection (A) will fail to be chosen in *all* situations in which both collections are available.

As an axiom, this seems, in itself, as " self-evident " as the choice or preference axioms, and surely more so than any of the utility concepts. Much (but not quite all) of it is implied by the " constancy of tastes " which is a pre-axiom to utility theory. This one axiom is sufficient to derive the whole meaningful content of demand theory,[3] needing only the introduction of one special definition, as follows:

Cost Indifferent Situations.[4] If, when confronted by a budget constraint and a set of prices, a consumer chooses some particular collection (A), then another situation, with a different set of prices, in which the budget constraint is such as just to permit the purchase of the original collection (A) at the new prices, is cost indifferent with regard to the first.

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[1] Some of the tools which Hicks has never succeeded in selling to any extent, such as his " rehabilitated " consumers' surplus, appear again in the new work. It seems doubtful whether these will prove any more popular than in the past.

[2] P. 1.

[3] Samuelson has nearly, but not quite, said the same thing. His analysis hangs on to the last shreds of some underlying theory of a utility-type pattern of consumer preferences. See P. A. Samuelson, " Consumption Theorems in Terms of ' Overcompensation ' rather than Indifference Comparisons ", *Economica*, February, 1953.

[4] One hesitates to introduce more new names into economics, but this pair of situations is going to turn up very frequently in future demand theory discussions. Neither Samuelson nor Hicks named the situations as a pair. To Samuelson, the

Given the axiom and the definition, then the whole content of demand theory, in so far as no *empirical* knowledge about the consumer's behaviour is assumed, is summed up in the *Substitution Theorem*:[1]

For two situations, with sets of prices (p_1), (p_2), respectively, and budget constraints such that the second situation is cost indifferent to the first, then the collections (q_1), (q_2) chosen by the individual in the two situations will be related by the following inequality:

$$\Sigma (p_2 - p_1) \cdot (q_2 - q_1) \leq O.$$

This says that (i) at least one commodity shows a change in quantity of opposite sign to its change in price (unless there is no change at all in any of the quantities), and (ii) the numerical value of the sum-products for commodities in which price and quantity move in opposite directions exceeds the numerical value of the sum-products for commodities in which price and quantity move in the same direction (" substitution is dominant for the system as a whole ").

From this follows the one-commodity *Corollary*, that, if, between cost-indifferent situations there is a change in the price of one commodity only, the quantity of that commodity must move in the opposite direction to its price, if it changes at all.

If we can assume some *empirical* knowledge about the relationships between changes in income alone and changes in the quantity of each commodity (and it is the tradition, well enough founded, presumably,

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second situation was ' overcompensated '—an unhappy term that relies on indifference as a point of reference, and does not imply an upper boundary. Hicks refers to the income difference between the situations as the ' cost difference '; hence the present term, for when the ' cost difference ' is allowed for, the situations are ' cost indifferent '. The relationship of cost indifference is not symmetrical, and this would seem to be the chief objection to the term.

[1] *Proof of the Substitution Theorem.* If the incomes in the two situations are denoted by I_1, I_2, then, from the definition of cost-indifferent positions,

$$I_2 = \Sigma p_2 \cdot q_1 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Also, from the budget constraint in the second situation,

$$p_2 \cdot q_2 \leq I_2 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$
$$\leq p_2 \cdot q_1 \quad \text{(from (1))} \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

From the consistency axiom, if (q_2) had been available in the first situation and was different from (q_1), it would not have been chosen in the second: either it cannot have been available, or (q_2) = (q_1).

Therefore, $\Sigma p_1 \cdot q_2 \geq I_1 \geq p_1 \cdot q_1 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$

$$\geq p_1 \cdot q_1 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Multiplying (3) by (– 1), which reverses the direction of the inequality, and adding to (5), we obtain $\Sigma(p_1 - p_2) \cdot q_2 \geq \Sigma(p_1 - p_2) \cdot q_1$.

$$\text{Hence, } \Sigma (p_1 - p_2) \cdot (q_2 - q_1) \geq O$$
$$\text{or } \quad \Sigma (p_2 - p_1) \cdot (q_2 - q_1) \leq O$$

Examination of the budget conditions (2) and (4) will show that it is not necessary to assume that the consumer spends all his income in either situation. In Hicks's proof of the equivalent theorem in terms of preference-indifferent positions, he needs the assumption that the consumer always prefers more of both goods (is never inside his budget boundary) as well as the assumptions of weak ordering. The above proof holds even if either or both points lie inside the budget boundaries.

but too little made explicit, that empirical knowledge of this sort is more easy to come by than price-quantity relationships), then we can derive the only conclusion from demand theory that is in wide use among general purpose economists, the " law " of demand for a single *ceteris paribus* price change. Given the existence of an intermediate position for which the substitution theorem holds then, irrespective of whether this position is defined as cost indifferent or preference indifferent, the law is derived in the traditional two-part Slutzky-Allen-Hicks manner.

We can derive demand theory, therefore, from the idea of consistency treated as our basic axiom, and derive it with a minimum of fuss. There is no need to worry about orderings, transitivity, indifference, integrability or individuals condemned forever to spiral around their preferred positions and never reach them.[1] All these things form a fascinating topic of their own, of vital importance for welfare economics (for here we have to face the problem of whether choice implies welfare maximisation), but one better left out of demand theory and therefore out of plain economics.

Of course, if there is empirical knowledge of the behaviour of an actual consumer, then the consistency approach can do everything that the preference approach can. If one can move a consumer to a position that is preference indifferent and watch his behaviour, one can move him to a position that is cost indifferent and watch his behaviour. Statements of an empirical nature, such as that the substitution effect is larger than the income effect, can be made in terms of either approach. The great advantage of the cost indifference position in relation to experiments, real or hypothetical, is that the position is *objectively* ascertainable and, if economics is to be approached scientifically, surely this is decisive.

All through his book, Hicks alludes to the possibility of a complete demand theory based on cost-indifferent situations (leaving aside the question of whether consistency is to be treated as a theorem or an axiom), but himself chooses the more perilous path of analysis in terms of preference-indifferent situations. Indeed, Hicks's book contains all the parts, beautifully polished and laid out, for a " Do It Yourself Demand Theory Kit ", but somehow the examples he gives of the uses of the parts are not always happy.

II

After the polish of the first seven chapters, the rest of the book is, except in parts (these parts occur chiefly in chapters XI, XII and XIX), rather disappointing in view of what we have come to expect from the author. Most of the chapters not cited above are largely occupied in heroic attempts to extract more out of demand theory than is contained in it. In spite of this heroism, and in spite of the variety of subtle analytical ingenuities presented, the results are a mixed bag of valid conclusions from highly particular assumptions (surely a consumer whose expansion paths for *all* commodities are straight lines[1] is not a common animal) plus dubiously, or only approximately, valid conclusions that seem to have little application.

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[1] See N. Georgescu-Roegen, " Choice and Revealed Preference ", *Southern Economic Journal*, October, 1954.

One cannot criticise Hicks for entertaining himself by playing analytical games, but one can criticise him for putting those games in a book of this kind and providing no signposts to assist the reader in sorting out the important from the trivial. Serious students, who work their way patiently through these particular chapters, must surely end up in a state of considerable confusion as to what demand theory really does tell us. Directly on the heels of the generalised substitution theorem (itself the quintessence of demand theory) comes the " reciprocity theorem " based on some doubtful arguments, and then the strange " secondary substitution theorems ". All these are pronounced to be " theorems ". Perhaps Hicks's most startling plaything is his marginal valuation diagram,[2] which surely implies indifference curves that are convex (at the ends anyway), and therefore denies the validity of the whole apparatus with which he is working: this seems a good argument for keeping to the consistency axiom and avoiding utility-type analysis.

The really important criticism that must be levelled at Hicks's treatment of demand theory is of his " generalised law of demand ": here I think his analysis to be definitely misleading. There is no statement that can be made about the results of a mixed price change, with money income kept constant, that has any sort of status of a law. Hicks here seems to be assuming that such a law exists by analogy with the case of a single price change, and it is not surprising that he finds exceptions without difficulty.

When he first introduces the " law ", Hicks does it with correct circumspection, seeming to state it only for the situation in which the prices all change in the same direction. In this case he expresses the law in the following manner, using his own notation[3]

$$(dp \cdot dq + \delta q) \geq O$$

Moving on to discuss a mixed price change, Hicks still talks of the law, but now merely states that " there is a presumption that the generalized law of demand will usually hold "[4]. A little later, introducing an example with a mixed price change by saying " a case in which the

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[1] See Ch. XIV.

[2] P. 87 (Fig. 14).

[3] P. 139. A comment might be made here about Hicks's notation, which does not add to the ease of following his analysis. By the above expression, Hicks means what would be written in more conventional notation as:

$$\Sigma dp \cdot (dq + \delta q) \leq O$$

Hicks's *dp*'s are the *negatives* of the price changes, his brackets represent summation, and, by $a.b + c$, he means not $(a.b) + c$, but $a.(b + c)$.

[4] P. 140.

law of demand would break down, for this new reason, is the following ",[1] he seems clearly to be applying the " law " to a generalised price change. Then, in his concluding chapter, he loses all caution and mis-states the nature of the case completely. Here, after discussing the likelihood of " perverse " price-quantity relationships among the commodities taken one by one, and without any mention of restriction on the type of price movement, Hicks goes on: "The generalized law of demand does however set a limit on the extent to which such ' perverse ' movements can occur. The sum-product of price-changes by quantity changes (taken with proper attention to sign) must move in the same way as it would if only price were changing. In this sense, the perverse movements must be swamped by the normal movements."[2]

Now, for any complex price change, in which all prices do not move in the same direction, no law of demand exists: there is no certainty, nor indeed even a presumption, that either the prices and quantities of individual commodities will move in opposite directions, or that the sum product of the price-quantity changes will have any particular sign. For example, consider a two-commodity case in which one price rises and the other falls, but in which the net effect is that the original collection can be bought with a lower income. Then, if both goods are normal, the income effect will make the quantity of both of them increase. Suppose that the substitution effect is small, so that the quantities of both will change little for a move to the cost-indifferent position. In this position the quantity of the good whose price has fallen will have increased a very small amount, the quantity of the good whose price has risen will have fallen a fraction. Now restore the full money income. If the income elasticity of the good whose price has fallen is small, its quantity will increase only a little, and if the income elasticity of the other good is high, its quantity will increase much more, enough to more than counterbalance the fall from the substitution effect. In the final position, the quantities of both goods will have increased, and the sum-products of the price and quantity changes can quite easily be " perverse "—with nothing " perverse " about the behaviour of any part of the process.[3]

The above example is substantially the same as that given by Hicks himself,[4] but Hicks confuses his analysis of the case by phrasing it to make the case seem a very exceptional one. On what basis can we say that a small substitution effect, and an income effect greater for one good than for the other, is exceptional? If we must attempt to guess at this kind of thing, it seems extremely likely that goods which have markedly different income elasticities (and are therefore regarded by the consumer as very different kinds of things) have also small substitution effects: the case seems a likely enough one to me.

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[1] P. 142. [2] P. 193.

[3] For those who like to try arithmetic examples, the following gives the kind of result described above. Initial position, prices 10, 10; quantities, 10, 10; income 200. Cost-indifferent position, prices 8, 11; quantities 10·25, 9·82; income 190. Final quantities, 10·26, 10·63. The sum-product of the total price quantity changes is 0·11 (positive), taking all signs in their correct algebraic sense. This example satisfies all the consistency tests.

[4] P. 142.

Guessing at the relative magnitudes of the various effects is, in any case, a useless, and probably dangerous, occupation. What we do want to do is to draw a very sharp distinction indeed between two types of conclusion derived from economic analysis.

(i) A generally valid conclusion derived directly from accepted axioms.
(ii) A special conclusion that holds only for certain values of certain variables.

The Substitution Theorem belongs to category (i). The single commodity law of demand belongs to category (ii), but has a special status since only one crucial value, and that usually presumed to be easily ascertainable, is involved. The "generalized law of demand" has no such special status. Except in the clear case of prices changing all in the same direction, the specification of the values necessary to cause the "law" to be obeyed is so complex as to amount to little more than saying that if the values are such as to make the conclusion true, then it is true.

Too often, in this book, Hicks commences with a category (ii) conclusion, then works through a complex series of guesses as to the values of the variables, couched in very vague terms (Q. When is a substitution effect large? A. When it is large enough to prove whatever is wanted to be proved), and ends up with the unsuspecting reader believing the conclusion is either universally valid, or near enough. This method may be time-honoured (the ghost of Marshall again), but it is wholly bad. That Hicks, the first chapter of whose work is "The Econometric Approach", should commit this sin is a matter for both surprise and sorrow. Yet in the end, by the very insubstantial nature of his results, Hicks illustrates that an ounce of knowledge would be worth a ton of guessing.

What can one say of this book in summing up? Only that it is very mixed. It contains Hicks both at his best and at his worst. As an introduction to the most up-to-date techniques of demand, utility and preference analysis it deserves the highest praise. As a collection of conclusions, to be pounced upon by ingenuous students of the subject as the "laws of demand analysis", it seems potentially dangerous. Perhaps this danger will remain potential, for it appears to be the kind of book (in spite of its avoidance of the more terrifying sort of mathematics) that will be read essentially by specialists. As a bag of mixed surprises into which such people can delve, it is wholly fascinating. There are very many more things in the bag than have been alluded to in this review, and readers can decide for themselves how far most of these are relevant or useful.

It would be a very great pity, however, if certain parts of the book, especially those first seven chapters, were lost to the general economic reader.

The London School of Economics.

Book Reviews

Lord Norman. By SIR HENRY CLAY. Macmillan & Co. Ltd. 1957. xi + 495 pp. 36s.

Montagu Collet Norman was a central banker for thirty-seven years. He became a director of the Bank of England in 1907, joined its staff for special war work in 1916, and was elected Deputy Governor in 1918. When he was chosen as Governor in 1920 it was probably expected that he would serve only the traditional two years. He left the position twenty-four years later. No other comparable period has witnessed such swift and pervasive changes in the structure and functioning of the world's monetary system. It was a period of great opportunity for a bold and enterprising man. Norman was such a man, whatever may be the verdict concerning his policies.

When Norman became a director of the Bank in 1907 both the international gold standard and the London market were approaching their apex. The world seemed to have found at last a truly international monetary system combining the advantages of stable exchange rates, free multilateral payments, free capital movements, relatively free international trade, and what was then considered an acceptable degree of economic stability. The London market was the centre of this credit and payments mechanism and the Bank of England was its master. To say, as is often done, that gold was then on a sterling standard managed by the Bank of England is but a slight exaggeration. When Norman became Governor in 1920 all this had been swept away. The international gold standard lay in ruins and monetary systems everywhere were in disorder. Production and trade were depressed, partly by the unrepaired physical destruction of the war, partly by political and economic dislocations. The world needed both monetary and economic reconstruction. Norman was a leader in both. He exerted his influence in many ways: through the monetary policy of the Bank; as consultant and advisor to his Government on financing, reparations and war debts, and many other matters ; through domestic and foreign lenders in the City ; through close associates—Moreau called them his agents—on the Finance Committee of the League of Nations, which did so much stabilization and reconstruction work after World War I; and through central bankers elsewhere.

Norman's most co-operative and useful colleague in these projects up to 1928 was Benjamin Strong, powerful Governor of the Federal Reserve Bank of New York and outstanding leader in the Federal Reserve System during its first fourteen years. Strong shared Norman's most important views and hopes: that international monetary reconstruction was a prime requisite of economic reconstruction; that an international gold standard was the only practical solution; that sterling as a great key currency should be among the first stabilized; that they should assist other countries to return to gold; and that close co-operation among central bankers would still be essential after gold standards had been restored. These two men, representing the world's two great key currencies and international money markets, were the outstanding leaders in monetary reconstruction and central bank co-operation during the 1920's.

After sterling returned to gold in 1925 Norman was busy indeed. Abroad, he helped restore gold payments in other countries, assisting in drawing up stabilization plans, arranging central bank credits, greatly influencing the flow of international loans from London and other major financial markets, and working for international central bank co-operation. At home he faced formidable problems. At least partly because of the parity chosen for sterling, the objective of maintaining relatively full employment conflicted with that of equilibrating Britain's receipts and payments and protecting her gold reserve. The former called for a relatively easy-money policy. The latter required interest rates in London above those in New York and other major financial centres in order to attract funds to London and divert borrowing to other markets. The two objectives could be reconciled only if rates elsewhere could be kept low. Despite Strong's co-operative attitude this was not to occur. London came under increasing pressure and Norman under increasing criticism as France regained monetary power and as credit tightened in New York in 1928 and 1929.

Norman faced new problems as the international gold standard disintegrated in the early 1930's and with it the whole system of free multilateral payments and relatively free movements of capital and goods. He had to acclimate his thinking and policies to a world of fluctuating exchange rates, exchange equalization accounts, exchange controls, national limitations on capital movements, and rising obstacles to trade. To the true internationalist these were indeed mad policies. He was to end his career as a full-time central banker as he had begun it in 1916—helping his country win a war.

Sir Henry Clay has given us an illuminating view of the man, his policies, and his times. The reader begins to see Norman not as an enigma but as a complex and powerful human being who became a " living force on a historic scale ". He sees great problems of the times through Norman's eyes and participates vicariously in both momentous and minor decisions. Every serious student of central banking and economic history should be grateful to Sir Henry for his painstaking work and to Lady Norman and the Bank of England for their co-operation in making materials available. It is a pity that Sir Henry did not live to finish the book. He was killed in a motor accident in the summer of 1954 when he had completed only that part of his draft covering the period up to World War II. It was decided, probably wisely, to publish the draft with no more than minor changes, together with two postscripts by former close associates of Lord Norman's. The first deals briefly with the World War II period. The second is a brilliant vignette of Norman, the man.

If Sir Henry had lived to round out and polish his work at least some of the following comments would probably be unnecessary. Despite its valuable contributions this book leaves one with a feeling that it ought to have done more. The absence of any attempt to provide a definitive evaluation of the man and his policies is not serious; others can do that. What is missing above all are a feeling for the spirit and values of the times, the grand scope of Norman's ambitions, the boldness of some of his decisions, and the types of contrasts and comparisons which would illuminate problems of our day. Many of the relevant materials are presented, but their full significance is not brought out.

For example, Norman's goals for monetary and economic reconstruction after World War I were in many respects far more ambitious than those of reconstruction after World War II. The latter tended to emphasize national interests and at least condoned obstructions to international movements of capital and trade. A true internationalist, Norman would have spurned any set of monetary arrangements that tended to stifle rather than facilitate world trade and capital movements. His goals were no less than to re-create out of the rubble and disorder of the war a new international economy with free multilateral payments and relatively free movements of capital and trade. An international gold standard was, in his opinion, an essential part of such a world economy. He believed his country could achieve its full potentialities only as an integral part of such a system. In striving to achieve these ambitious goals he was not aided by huge flows of government grants and loans. Governments were not yet willing to lend such assistance or even, Norman and Strong thought, to deal sensibly with war debts and reparations. In view of experience since World War II, one of the most interesting questions with respect to the 1920's is how so much could have been accomplished in the way of monetary and economic reconstruction with so little international aid from governments.

Nor does the book bring out clearly the grand scope of Norman's ambitions for central banks and central bankers. His ambition was no less than to see " independent " central banks established in every important country and for " independent " central bankers to co-operate in managing the world's monetary systems purely on the basis of economic considerations and without respect to political issues. Perhaps this ambition was visionary, naive, and even undemocratic. But it was not based solely on prejudice. He had in mind the demonstrated ineptitude of the governments of the day in dealing with reparations and war debt problems, their inability to discuss economic questions without becoming snagged in divisive political issues, their unwillingness to assume a constructive rôle and aid international reconstruction, and the fact that when they intervened in demestic monetary policy their motives were usually not to promote economic growth and stability but to ease the problems of the finance minister.

The book also conveys inadequately Norman's feeling of frustration and even of suffering during the period after 1925 when the tight monetary policies necessary for balance-of-payments reasons tended to depress British industry. Norman's vague and evasive answers to critical members of the Macmillan Committee left some with the impression that he did not understand the relationship of monetary policy to business activity. He may properly be criticized for his inarticulateness, his feeling that he was under no obligation to give reasons for his actions, and his attempt to escape sharper criticism, but not for a lack of understanding. He knew perfectly well, as his letters to Strong and others show, that dear money was then bad for trade but felt, as had his pre-war predecessors, that the first duty of a central bank was to assure the maintenance of gold payments. He regretted these effects on trade and generally kept money as easy as possible without threatening his international position. It was perhaps his misfortune to inherit the pre-war objective of protecting gold reserves without inheriting the pre-war tolerance of deflation or the pre-war degree of adjustability of cost structures.

Any fair appraisal of Norman and his policies must view them in the context of the values and thinking of his times. Norman's goals were approved by the great majority in the 1920's. Of course there were some who opposed the restoration of the pound to its pre-war parity, or any sort of gold standard, or even any system of stable exchange rates and free international payments.

They had their say and were defeated. If Norman made mistakes in selecting goals they were mistakes shared by the majority of a whole generation. It is not at all clear that Norman's policy implementation was seriously faulty in relation to the goals selected.

If we are critical of the monetary policies of the 1920's an equally questioning attitude toward the policies of our own generation may be in order. Perhaps Norman's goal of free multilateral payments was unrealistically ambitious. But is it clear that a profusion of nationalistic exchange controls and other restrictions on international trade and capital movements is a satisfactory answer for countries heavily dependent on international transactions ? Perhaps Norman overvalued stability of exchange rates through time. But should we be satisfied with fluctuating exchange rates or rates liable to frequent depreciation ? Perhaps Norman was too fearful of inflation and too favourable to the discipline of gold. But in seeking " full employment at whatever cost " may we be giving too little attention to the integrity of the monetary unit ? Perhaps we should reject Norman's idea that a nation's monetary policy, money incomes, price levels, and cost structures should be forced to adjust themselves in such a way as to equilibrate its balance of payments. But what of monetary policies that largely ignore a nation's balance-of-payments position ? Perhaps Norman was unwise in thinking that adjustments could be achieved through a decrease of money wage rates and other costs. But is it wiser for a central bank to validate whatever increases in money wage rates may be agreed upon between employers and employees ?

In practice, monetary policy almost always represents some compromise of objectives, both domestic and international. Most of us now consider Norman's compromises unacceptable. It seems doubtful that our own will enjoy the full approval of later generations.

LESTER V. CHANDLER.

Mathematical Economics. By R. G. D. ALLEN. Macmillan & Co. Ltd. 1956. xvi+768 pp. 63s.

No one will be surprised to learn that Professor Allen has produced another lucid and informative volume which can unravel mysteries of mathematical economics for the neophyte and for the economist or the mathematician who is inadequately prepared in these matters. In short, except in a few spots, the book serves its purpose and serves it very well. For it is written with the sure hand of one of the profession's few master expositors.

Two possible misconceptions should be cleared up at once. First, this is *not* a new edition of Allen's *Mathematical Analysis for Economists* (Macmillan, London, 1938). It is a completely new book treating mathematical topics most of which have only recently begun to play an important rôle in economics and which are almost totally distinct from the subjects in the earlier work. The new volume in no way replaces the other; indeed there is much to be said for using the two books together. Second, it should be made clear that while this is an expository volume it is not designed for Professor Robertson's mathematical idiot who desires a quick and easy digest of econometric esoterica. It is written to be helpful to the serious student of these areas, one who hopes to be able to make use of the technical writings of the specialist.

By and large the subject-matter is confined to two major fields: to dynamic models involving differential and difference equations, and to mathematical and, in particular, linear, programming and the related areas of games theory and input-output analysis. There is also a chapter on value (demand) theory and one on the aggregation problem, all fields in which good expository material is not wasted.

The most thorough material by far is that which composes the dynamic analysis. Almost half the book is devoted to this subject. Particularly noteworthy are the lucid discussions of non-linear models, of the Laplace transform and of the engineers' contributions to economic dynamics both substantive and methodological, many of which were before not easily available to the non-specialist. I regret that more is not said in the book about simultaneous differential and difference equation systems which play so important a part in multiple market stability analysis, in dynamic input-output models, in the discussions of the multi-sector multiplier and in many other areas of economic theory. And perhaps more might profitably have been added on the phase space analysis of the qualitative properties of non-linear systems. It is also tempting to quibble with the author's de-emphasis of the non-linearities in the Hicks trade cycle model. But the dynamics section of the book is excellent, and criticism can only be of the impertinent variety in which the reviewer in effect describes some other book that he would also like to see written.

The portions of the volume which are devoted to games, programming and related matters constitute a useful introduction to the subject. But for the more advanced student they are less satisfactory than the earlier materials because the author has decided to maintain the simplicity of his exposition by leaving out some of the most difficult parts of the theory.

Though he employs the term " activity analysis ", Professor Allen says little about some of the most important of those portions of the literature which may perhaps be called " activity analysis proper " to contrast them with linear and non-linear programming. Among those subjects lightly touched on are the applications of " noncalculus " techniques to welfare economics and the investigation of conditions sufficient to guarantee that the general equilibrium systems of Walras and Cassel are actually solvable and involve no inconsistency, something which cannot be accomplished by simply counting equations and unknowns to see that they are equal in number.

The author is clearly within his rights in deciding that these are topics which he would rather not discuss in detail. But it is difficult not to take exception to his omission of even an intuitive description of the derivation of the fundamental duality theorem of linear programming and of the closely related saddle point theorem for the zero sum two person game. Each of these theorems lies at the heart of its area of analysis. The book states them carefully and proceeds to build on them. But the reader is asked to take them entirely on faith, and I cannot help feeling that this represents a serious gap.

Other parts of the activity analysis section raise similar questions. Particularly the discussion of the welfare economics—activity analysis problems of the efficient allocation of resources (the latter portion of chapter 17) can in places be accused of superficiality. For example, the basic theorems on the prices needed to achieve an efficient allocation and the geometry of convex polyhedra with whose aid they are derived appear to be less difficult than they are in fact.

The foregoing remarks should not be misread as a denial of the usefulness of the games-programming-activity analysis section of the book. It will serve as a relatively easy to read introduction to the area which can exhibit to the student the nature of the problems and some of the reasoning employed to cope with them. The need for such an introduction is undeniable.

However, the reader who wishes to go on to make his own contributions in the area will first have to search further in the literature. Doubtless this must be true of any one summary discussion of such a major area of investigation, but this comment applies far more strongly to the activity analysis portion of the volume than to the part on dynamics.

Reviewers are constitutionally carping creatures, and the reader must forgive me if in accord with this tradition I have laid excessive emphasis on small shortcomings. There can be no doubt that Professor Allen's book, like all his writings, will be most valuable to the profession both as an aid in teaching and as a work of reference for the practitioner.

WILLIAM J. BAUMOL.

Studies in the Quantity Theory of Money. Edited by MILTON FRIEDMAN. University of Chicago Press, Chicago. 1956. v + 265 pp. 37s. 6d.

An introductory essay by Professor Friedman begins this book. It is followed by four empirical studies. The first of these, by Phillip Cagan, on hyperinflation, is the most satisfying, largely because the author has sufficient statistical material for his purpose. He examines seven hyperinflations and shows that, taking changes in the quantity of money as exogenously determined, the changes in the price level (and thus in real cash balances) can be explained by supposing the demand for money to have depended solely upon expected future price changes, where the expected rate of price change is an exponentially weighted average of past rates.

The second study, by John J. Klein, is concerned to discover why the quantity of money rose so much more, proportionately to the price level, in Germany from 1932 to 1944 than in other countries over comparable periods. He first discovers that part of the difference is a statistical illusion because some of the increase in the money supply was for occupied territories and because the official price index had a downward bias. On both points he is no doubt correct, though his ingenious attempts to measure the latter factor will probably arouse more admiration than conviction. One involves using an estimate of black-market sales in foodstuffs, and the assumption that black-market behaviour was similar in other commodity groups. Another uses the average denomination of currency to measure the price level. But whatever the error, it does seem correct to say that real cash balances rose considerably during the war. Klein regards this as a result of disruptions in the transport system and of economic controls, but his discussion of the importance of these factors is necessarily inconclusive and the examination of developments in the capital markets is quite inadequate.

The third and briefest study, by Eugene M. Lerner, concerns inflation in the Southern States during the Civil War. From July, 1861, to October, 1863, slightly over two-thirds of the Confederacy's revenue came from the printing press ! The announcement of a currency reform in 1864 led to an enormous acceleration of the rate of price increase, but prices actually dropped for a while, despite the military disruption of the economy, after the reform came into effect.

The fourth study, by Richard T. Selden, examines changes in the velocity of circulation of money in the United States. As the author admits, it is an incomplete study, but it is none the less of great interest. Three of the findings may be mentioned. The author confirms that income velocity underwent a secular decline from 1839 to 1939; he shows that it generally rose and fell in cyclical expansions and contractions; and he claims that " the cost of holding money, however measured, has been insignificant as a velocity determinant in the twentieth century ". There is an interesting discussion of the demand for cash balances in terms of income, prices, tastes, etc., in accord with the theory of consumer demand.

These brief summaries do not do justice to the authors. The two longer studies in particular, those of Cagan and Selden, contain interesting theoretical discussions and a great deal of painstaking and elaborate statistical work. Selden, for example, not content with gathering thirty-eight time series of income velocity, has gone on to compile seven of his own !

Professor Friedman's essay is entitled " The Quantity Theory of Money —A Restatement ". Some readers may be surprised to find that it is a rather agnostic document, not a Chicago manifesto. What the author actually does is to start by saying that " the quantity theory is a term evocative of a general approach " and explaining that the " Chicago tradition was (*sic*) not a rigid system . . . but a way of looking at things ", an approach which regarded as inadequate analysis that left money out of account. He then devotes a number of pages to an abstract formulation of the factors determining the demand for money. As he says himself, most economists would accept this analysis in the broad if not in detail, so I will not dwell on it here. Divergence of views occurs with respect to three issues, and Friedman specifies the attitude of the quantity theorist as involving the belief that the demand function for money is (i) stable and plays an important rôle, (ii) relatively independent of the supply of money and (iii) less than infinitely interest-elastic at all interest rates. This attitude does not involve the position that income velocity is a stable magnitude. The demand for money is regarded as dependent upon several other variables besides the level of income, so that the demand for money and its supply are not alone sufficient to determine the level of money income. Friedman does not tell us what equations he would introduce to complete the system: like his collaborators he is here concerned only with the demand function for money.

Friedman's formulation of what it means to be a quantity theorist, in section eighteen of his paper, is a clear and stimulating way of putting an important issue. It is followed by an interesting discussion on some points arising from the four empirical studies. Nevertheless one wishes that this final section of his own essay had set out more systematically (in terms of his own formulation of the issue) the significance of recent empirical findings. The four studies in this volume do not, after all, stand alone. They are matched, for example, by the studies of Khusro (*Yorkshire Bulletin* IV, 2) and Larsen (*International Economic Papers*, 6, and *Review of Economic Studies*, XVIII, 2). A general evaluation of the present state of knowledge would have made an interesting essay more useful.

RALPH TURVEY.

Outline of Monetary Economics. By A. C. L. DAY. Oxford University Press. 1957. xiii + 559 pp. 35s.

Outline of Monetary Economics is a substantial and comprehensive textbook for second- and third-year undergraduates, covering " the whole of the theory of macro-economics ", and " monetary events and institutions ". These being the branches of economics which I have myself for some years been attempting to expound for the benefit of undergraduates, I can with some confidence testify to Mr. Day's expository skill and to the value of his book for teaching purposes.

What also impressed me, in reading the book, is the close resemblance between Mr. Day's general approach and my own. Mr. Day was obviously, like me, reared on the *General Theory*, and his subsequent development, like my own, has clearly been built on Keynesian foundations: moreover, again like me, he is inclined to believe that the Theory which has served us so well will be equally valuable to the present-day undergraduate.

But while I am to some extent reassured to find that we are so well in step, I confess I am not entirely without misgivings. Are we not, both of us, slightly more at home in the world of the 1930s than in the world of 1957 ? Is it, for example, still appropriate to make so much of the liquidity trap and so little of the Quantity Theory ? Is it helpful to the undergraduate of the 1950s to present " The Basic Theory " (as Mr. Day describes the contents of his Part II) as relating solely to circumstances where expenditure changes only in the output, and never in the price, dimension (p. 48) ? Is it indeed helpful that all consideration of price changes should be deferred until half-way through a monetary textbook, until after the description not only of the Basic Theory but of the *modus operandi* of the banking system, the rôle of fiscal operations and the present position of interest-rate theory ? Does the trade cycle still merit a chapter to itself ? And is the Keynesian story about the pre-war newspaper competitions, in which the competitors had to select the six prettiest faces, still relevant to the formation of security prices not merely in the equity market (which is surely what Keynes had in mind) but also to the bond market, as Mr. Day would have us believe (p. 46) ?

I raise these questions not because I think I know the answers, still less that the answers must be unfavourable to Mr. Day, but because I think they are ones which teachers of economics ought constantly to bear in mind in reading Mr. Day's book.

I have indeed very few definite criticisms to make, and all are on minor points. A tendency for ordinary share prices to rise in booms does not necessarily imply a tendency for dividend yields to fall (p. 109). That bank deposits as a percentage of national income were higher in 1935–38 than in 1925–28 surely does not by itself demonstrate an increased " desire of the British public to hold its wealth in liquid form " (p. 188: see also similar arguments on pp. 196 and 205). Does " observation suggest that the usual tendency is for interest rates to rise when trade is active " ? no such tendency is at all clearly observable in the case of long-term gilts between 1850 and 1914. Is " a firm's decision to save-and-invest " logically (or even always in practice) " two decisions " ? (p. 113).

BRIAN TEW.

Introduction to Keynesian Dynamics. By KENNETH K. KURIHARA. George Allen & Unwin Ltd. 1956. 222 pp. 21s.

There are few good text-books on macro-economics, which makes it all the more important that new ones should be of high quality. This book, unfortunately, does not meet this desideratum; while the arrangement of subject matter is admirable, the same cannot be said of other aspects of this book.

The early chapters explain the three basic Keynesian functional relationships. Only two of these (the S and I functions) are " put together " in the following chapters, which in turn examine the static and simple dynamic properties of the resulting models. A chapter on the elementary foreign trade multiplier, and one on price flexibility and full employment conclude Part II. Part III outlines the elements of " Secular Economic Dynamics ", thus providing one of the very few introductory text-book treatments of the subject. The exposition is generally succinct, perhaps too much so for the purposes at hand.

It is a pity that a chapter dealing with the effects of the government sector on national income has been omitted, in view of the historical and practical link between macro-economic theory and fiscal policy. Such a chapter could replace with advantage most of the first chapter, where macro-economics is strangely contrasted with its " individualistic counterpart ", micro-economics, and where there is much naive *Dogmengeschichte* and *Wissenssoziologie*. The level of analysis is extremely uneven. Students who need to read the early chapters will have difficulty in understanding the later ones, where they confront notations in difference equations, static and dynamic multipliers, accelerator-multiplier models, etc. Incidentally, on p. 48 the " dynamic induced investment function " is written $I_t = \beta(Y_{t-1} - Y_{t-2})$, which is the usual formulation of the acceleration principle. In the subsequent (short-run) models, however, the accelerator is identified with the (lagged) marginal propensity to invest. Such a departure from usual terminology seems inappropriate in an introductory text-book; moreover, the different implications of the two hypotheses are not explained.

Assumptions are too often left implicit. For example, when the national income (in a closed economy without a government) is determined by means of C and I curves, it must be assumed that there is no business saving. Again, a unique multiplier (i.e. the size of which is independent of the sector where the increase in expenditure takes place) can be derived only on the assumption that all households have identical marginal propensities to consume. Surely, these are assumptions which should be pointed out to the student. The price level is discussed explicitly in the context of inflation only; in the under-employment model it is assumed constant and left unexplained. The chapter on inflation is couched exclusively in terms of the saving-investment analysis, which reveals too little of inflationary processes. In Part III there might have been more elucidation of the relationship between short-run and long-run macro theory, and more stress on the restrictive assumptions of the latter.

The references to what Keynes thought, said or suggested are too numerous for an introductory text-book. The whole tone reminds one of the barricades of the Keynesian Revolution, with the author firmly on the revolutionary side. Thus the reader is informed that a " completely regulated economy " enjoys " inevitable full employment (p. 11); and that the rate of interest is determined independently by the demand for and the supply of money " (p. 74). Analysis of hyper-inflations in terms of Keynesian models is hardly enlightening, yet such models are applied here to hyper-inflations.

Sometimes the style and mode of expression are peculiar. For example, explaining that market forces may lead to an equilibrium of under- or over- or full employment, the author concludes that " if less than full employment prevails, we must logically expect an under-employment equilibrium " (p. 190). Again, on p. 178 it is shown that, compared to a country with a high marginal propensity to import, a country with a low one will experience a larger rise in income as a result of a given increase in exports, but also, unfortunately, a larger fall in income as a result of a given decline in domestic investment. Hence, " the foreign trade multiplier is not an unmixed blessing " even in an under-employment world. This is as significant as the proposition that the domestic multiplier is not an " unmixed blessing " since it amplifies both expansions and contractions in investment.

There is at least one serious error, on pp. 187–93. This occurs in connection with a purported analysis of " capital accumulation and long-run equilibrium ", which demonstrates that in the long run full employment can be maintained only if full-employment savings are matched by investment. The argument here is supported by an unusual diagram, in which investment is plotted against the rate of interest " and each point on the I curve represents a particular rate of marginal efficiency of capital associated with some level of capital stock [the higher the capital stock the lower the M.E.C.] corresponding to some given rate of investment " (p. 188). All this clearly cannot be packed into a two-dimensional diagram. It apparently has not occurred to the author that a movement along his I curve requires a reduction in the capital stock in spite of continuing net investment.

KURT KLAPPHOLZ.

Indian Tax Reform. By NICHOLAS KALDOR. Department of Economic Affairs, Ministry of Finance, Government of India. New Delhi. 1956. iv + 139 pp.

This monograph represents the report of a survey made by Mr. Kaldor in early 1956 for the Indian Statistical Institute. The immediate motive behind the survey was the need for increased revenue to prevent inflation under the Second Five-Year Plan, a need placed by Kaldor at a minimum of R. 2,500 million additional per annum in contrast with the R. 900 million initially planned. In Kaldor's programme about half the additional revenue is to come from the reform of personal and business taxation, and the other half from land taxation and excises. (These latter taxes lie outside the scope of his report and are not discussed.) In more detail the sources are as follows:

SOURCES OF ADDED REVENUES

	Amount (millions of rupees per year)	
Reform of existing taxes—		
1. Personal income tax:		
Reduction of top bracket rates to 45% ..	–183	
Full taxation of capital gains and losses ..	400	
		217
2. Business income tax from tightening up administration and conversion to *ad rem* levy ..		300
New taxes—		
3. Expenditure tax graduated from 25% to 300% on excess over R. 10,000 *per capita* ..		150
4. Wealth tax graduated from 1/3% to 1 1/2% on excess over R. 100,000		250
5. Gift tax graduated from 10% to 80% in excess of R. 10,000 per donee, depending on net worth of recipient		300
Total additional revenues		1,217

This fiscal programme is unique for an underdeveloped country in that 90 per cent. of it comes from the taxation of wealth or the income from it. Appealing as some of its aspects are from an equity point of view, one wonders about the extent to which it will provide the proper economic motivation. Obviously the expenditure tax, if administrable, would be a primary factor in stimulating saving. But the encouragement of saving means that the concentration of wealth may increase. To rectify this result, and to offset the heavy burdens inevitably imposed on the low-income groups, Kaldor prescribes a general gift tax on all transfers of property, its level depending on the net worth of the recipient.

This step, it seems to me, brings his structure very close to that of a capital levy plus a fairly stiff income tax; surely such a programme would not be thought of as one especially designed to encourage thrift. Consider two proportional taxes—one on consumption and the other on gifts and inheritances. Together they are essentially the same as a capital levy with an annual tax on income: the first taxes cumulated savings, and the other taxes annual consumption plus saving. The major and important difference lies in the postponement of the tax on saving under an expenditure tax as compared with an income tax—the so-called double taxation of savings. But this factor is substantially equalized under Kaldor's programme by the special annual tax on wealth.

Kaldor's structure is not, of course, a proportional one. Both the gift and the expenditure tax are steeply progressive. This makes it impossible for any general statement to be made about incentives, since one must weigh the total spending of an individual against the net worth of the recipients of his wealth. One cannot say how this will work out for the community as a whole.

While one may have doubts then about the economic consequences of the programme, it has many equity virtues. Shifting an estate tax to one on inheritance and graduating it on the basis of the net worth of the recipient is surely a desirable reform. It would leave saving-consumption incentives essentially unimpaired, and be more equitable. Moreover, the suggested reforms of the income tax have much to be said in their favour. Some are extremely novel and interesting, such as the proposal to allow the present worth of future depreciation to be deducted in the year the asset is acquired. In general they represent the laudable aim of squaring statutory rates with actual effective rates, and should marshall widespread support.

This report certainly deserves to be widely read and discussed. It is a practical application of Kaldor's belief that income alone is an inadequate standard for equitable taxation. Hence a broader range of fiscal problems is covered than in his earlier study, *The Expenditure Tax*, treated in the stimulating and rigorous way we have come to expect from this author.

E. CARY BROWN.

Industrial Tax-Exemption in Puerto Rico. By MILTON C. TAYLOR. University of Wisconsin Press, Madison. 1957. xi+172 pp. $3.50.

The envious eyes of many developing countries have recently been turned towards the small Commonwealth of Puerto Rico, which, starting from an exceptionally low level of income per head and a high level of over-population, (a million more inhabitants than Jamaica in a much smaller island), has, apparently by its own efforts, over the last ten years staged a pocket industrial revolution and raised itself to a level of income far above that of any of its neighbours. This has been accomplished without the aid of those loans from overseas governments or international agencies which other developing countries believe to be so necessary for their progress.

" Operation bootstrap ", as a governor of Puerto Rico has termed it, has been an integrated government programme, in which PRIDCO (Puerto Rico Industrial Development Corporation) and the Investment Bank have played important parts; but it is generally accepted, both inside Puerto Rico and abroad, that the major cause of success has been the industrial tax exemption provisions. Mr. Taylor has performed a most useful work in examining the different aspects of the Tax Exemption Programme, so that it is now possible not only to evaluate its merits and drawbacks but also for other Carribean countries to deduce how successful they might be with a similar programme.

It is of course obvious that Puerto Rico starts with quite exceptional advantages compared to its neighbours. It is within the U.S. customs wall. " Migration to the Mainland " has at all times been perfectly free; in fact its fluctuations have been closely correlated with the level of employment in the U.S. Thus Puerto Rico's population troubles were aggravated in the 1930's, and the employment situation has been substantially relieved in the 1940's and 50's by this factor alone. Even more, labour shortage in the U.S. would in any case have encouraged firms to make use of Puerto Rico's abundance of cheap labour by setting up establishments there. Sea transport to the rich markets of the Eastern Seaboard is actually cheaper than transport from many parts of the continental U.S. Finally, U.S. companies operating in Puerto Rico can use the Western Hemisphere tax concessions and by taking a little trouble can contrive to escape company taxation completely, both in the U.S. and in Puerto Rico. Puerto Rico is thus able to make its tax concessions fully operative, in contrast to the situation in British Overseas Territories, which in the past have been unable to make their concessions fully effective because the British Treasury has pocketed the difference between the overseas and the British rates of tax.

It must first be noticed that the Puerto Rican Tax Exemption Programme itself goes considerably further than the concessions which have been offered elsewhere. Exemption covers not only income and profit taxes, but also central and local property taxes, most other municipal levies and many excise taxes. In fact the exemption covers virtually everything except some very minor taxes and income from investments. Secondly, the period of exemption is very long: twelve years from 1947 with a gradual tapering off to 1962; most countries have been content to offer five year concessions. Thirdly, since the exemption takes the form of a contract between the corporation and the government, once it has been granted (a process which includes a petition on the part of the firm and a public hearing), it is absolutely certain and cannot be upset by subsequent legislation.

Again, the scope of the concession is much wider than has been usual. It is not confined to new " pioneer " industries, but can be extended to any one of forty-two " designated " industries as soon as a new firm starts up. The original intention of this rather odd provision was apparently to give special help to industries with growth possibilities, even if some start had been made with them before 1947; old established industries, such as rum, were not

" designated ", and in fact have been treated rather toughly. The effect of the provision has been surprising. For instance, a small and weak firm started up in the furniture trade, got its concession, and although it only survived a few months it lived long enough to " liberate " thirty seven existing firms. In fact it has not been possible to concentrate the concession on expanding industries. In Mr. Taylor's opinion many of the firms receiving it have had such an old and established existence that it appears rather as an old age pension.

In this respect, as in many others, the original intention of the legislature was far from clear. The statute was ambiguous; enforcement has been capricious and inefficient. Mr. Taylor dubs it a " grade D statute enforced by a grade C administration ". To make matters worse, two government departments, the Office of Tax Exemption and the Treasury, have divided responsibility for enforcement. Moreover, the exact terms of concession are written specifically into each contract, so that compliance is almost impossible to check.

The result of all this has been twofold. On the one hand a firm can only get optimum terms written into its contract by employing expert lawyers, (the privileges are very complicated and depend on the interaction of the U.S. and Puerto Rico revenue codes); so there has grown up a group of lawyers who charge exorbitantly and for whom the whole affair has been a wonderful " bonanza ". Since most of the petitioning firms are small and weak, this may actually inhibit development to some extent. Mr. Taylor also maintains that the exemption programme has " attracted a number of fast buck businessmen who violate laws as a calculated risk ".

On the other hand the revenue has " lost " considerable sums by forgoing tax it might have collected without losing any of the development that has taken place. The extent of this loss is difficult to measure; but Mr. Taylor judges that it was of the order of $5300 mn. between 1947 and 1951. The greatest " loss " has been on existing firms which failed to expand; In fact most of the benefit went to " a few significantly profitable firms ". Most of the new firms made losses in the first year, but those which did not suffer infant mortality had fully recovered within five years. Thus from the point of view of encouragement a five-year tax holiday would have been quite sufficient.

And yet, and in spite of all this, not only the Puerto Ricans themselves, but also the firms which have received the concession, believe the programme to have been brilliantly successful. " There is a tendency for the Administration to view Tax Exemption as a dynamic elixir that is essentially costless." This is no doubt because the losses are invisible, and no field investigation into their extent has ever been attempted. Most firms when questioned gave tax exemption as the most powerful attraction for setting up in Puerto Rico, although many admitted that low wages and absence of Trade Union trouble were nearly as important. It does appear, however, that since the concession has gone on so long, many of them have persuaded themselves that it will last for ever. (And who can say that they may not be right ?). It has never been doubted that permanent exemption from income and profit taxes would be a powerful stimulant to investment; the only doubt is how, in the long run, the public services would be financed.

It will be seen that the Puerto Rican Tax Exemption Programme could not easily be transplanted elsewhere, even if other countries should desire it.

Nevertheless the methods used are full of interest for countries similarly placed. Perhaps in the long run the most important achievements will have been to demonstrate that governments really can do something, and that poverty and hopelessness need not be the lot of the poor countries for ever.

URSULA K. HICKS.

The Structural Interdependence of the Economy. Edited by TIBOR BARNA. John Wiley & Sons, Inc., New York. Chapman & Hall Ltd. 1957. viii+429 pp. 60s.

Since the publication of Leontief's first paper in 1936, input-output analysis has developed rapidly with the result that today, despite various shortcomings, it lies well within the fold of orthodox economics, and is accepted not only as a tool of econometric investigation but also as a basis for national economic planning. Most of the credit for this must go, of course, to Leontief himself and to his colleagues at Harvard who laid the groundwork for the construction and inversion of the first input-output matrices, but in recent years economists from other countries have become interested in the new approach, and tableaux of all sizes and degrees of accuracy have been drawn up for a number of European, South American, and Asian economies. Thus the main interest in this volume lies in the account which it gives of experience in the use of the input-output technique in Denmark, France, Italy, the Netherlands, Norway, and the United Kingdom. In addition, it includes fifteen papers on the more general, theoretical analysis of structural interdependence, discussing such seemingly disparate topics as programming and process analysis, social accounting, economic development and international trade.

It is impossible within the short space of a review to do full justice to the contents of this volume when so many of the contributions are worthy of detailed, critical discussion. In any case it is likely that the more important ones will receive due consideration in the journals. However, it may be useful to note some of the points made without necessarily relating them to the table of contents. This can be done most simply under three headings; the construction of the input-output table, the interpretation of the table, and the method of research.

Perhaps the major change in the first twenty years of input-output analysis has resulted from the victory of the open system over the closed system. The first tableau set up by Leontief was based on a closed system with all sectors included in the matrix. Since then the tendency has been to construct a rectangular tableau in which a subset of the sectors is treated as endogenous and the remainder as exogenous. This has numerous practical advantages. In Italy, for example, distinctions between the multiple products of the sectors have been brought into the tableau in this way.

Another interesting development is to distinguish between different categories of flows in the model. In Norway an attempt has been made to separate real and financial flows, whereas in France a more general analysis in terms of several accounts for each sector is preferred. In this respect Stone's paper describing transactions models which may be interpreted either in terms of input-output relationships or as a system of social accounts is especially relevant.

The question of data is also of primary importance notably in Norway where recent figures are either unavailable or exceedingly inaccurate. In all six countries a census of production has not been considered sufficient and alternative sources have been used. These include statistics of population, banking and manufacturing output, annual budget and tax returns, the financial accounts of public utilities, special industry studies, and even information derived directly from engineering specifications. It is probably true that the major hindrance to advance in this field continues to be a shortage of accurate data. It has been suggested that detailed industry studies and process analysis may overcome this difficulty, but these take a great deal of time, and are likely to be of little assistance in the near future.

The tableau itself was originally conceived of as generated by a model of the form $(I-A)X=Y$, where X is the level of activity of the sectors and Y the bill of goods. The theoretical difficulties connected with this model are: (*a*) the stability of the elements of the A matrix, (*b*) the level of aggregation involved in the X vector, and (*c*) the lack of a time dimension and the omission of variables accounting for price and technological change. All these factors are, of course, interrelated, and may be discussed in terms of the technological coefficients. If production functions are, in fact, non-linear or vary over time, or individual economic units with different technologies are classified together, the technological coefficients will not stay constant, and forecasts made from the simple linear model will be inaccurate. In particular, in the long run as the economy becomes more efficient, its productive capacity will be underestimated, while in the short run as capacity is approached, production possibilities will be overestimated. Although these troubles may in practice be partially overcome in an *ad hoc* fashion, so far no method has been advanced of dealing with them within the model without making it intractable. The aggregation problem is an old bugbear, and, unfortunately, as far as this book is concerned is no nearer solution. Barna presents some useful tips on practical aggregation, while Malinvaud continues to devote his time to ideal aggregation without deriving any new theorems. Indeed, it is tempting now to conclude that the approach via weighted sums of micro-variables is a blind alley.

The main conclusion on research to be derived from this volume is that it must be done in teams all the members of which are willing to co-operate in the use of a standard method. (In the Netherlands, for example, the danger is pointed out of research workers becoming highly specialised on one part of the tableau, and even developing their own accounting principles.) A second point is the need for experience. As time goes on, and the research team really gets to understand what it is doing, the same mistakes are not repeated, and the construction of new tableaux on the basis of the older ones becomes so much easier.

This point about research teams leads on to a final question. How are this and related branches of the " new economics " to be presented to the undergraduate ? In an introductory address to the conference entitled " the Changed Task of a Faculty of Economics " Guiseppe Brugier-Pacini tries to provide an answer within the context of the academic situation in Italy. He argues that the aims of economics faculties may be misplaced in so far as students are able to graduate while totally unaware of many of the most interesting recent advances in their own field. As a result they are unable to take a big enough part in the economic activities of the central government and industry. In England conditions are not as serious as they appear to be in Italy, but the state of preparedness of students for their eventual occupations must be kept constantly under review.

M. H. Peston.

Economy and Society. By T. Parsons and N. J. Smelser. Routledge & Kegan Paul Ltd. 1956. xxi + 322 pp. 35s.

" This volume is designed as a contribution to the synthesis of theory in economics and sociology " (p. xvii) or as an attempt at " integration ". That students of economics, politics and sociology should get together somehow for their mutual illumination, and the advance of their subjects, has been an admirable intellectual ambition since political economy first abstracted itself from moral philosophy. It has been stressed down the decades by the Historical School, by Positivists, by Institutionalists and by " straight " (if not narrow) economists—as, comparatively recently, in E. F. M. Durbin's *Plea for Co-operation between the Social Sciences* of 1938. Such pleas and ambitions are certainly often inspired by a very accurate insight into, and cogent criticism of, the limitations of pure (if not simple) economics. It is often admirable, also, to deplore some of the effects of the trend to narrow departmentalised specialisation and to contrast it, as our authors do, with the intellectual breadth of Marshall, Pareto and Max Weber. Nevertheless, this enterprise of synthesizing and integrating economic and sociological theory seems to have about it a considerable " penumbra "—(to revive a rather Laskian term)—of insubstantial intellectual Utopianism.

Of course there is nothing Utopian about co-operation between economists and sociologists on realistic investigations, using as much assistance as they can get from their respective theoretical apparatus. It is easy to point out vast areas where their different interests and approaches can mutually and generally illumine important realistic problems, for example, with regard to the labour market, wage claims, consumption habits, the effects of redundancy, etc., etc. But it is with the integration or synthesis of " *theory* ", and theory as seemingly abstract on the sociological side as the " general theory of social systems ", with which our authors are concerned. It would seem that it is above all at the theoretical level that the two subjects inevitably abstract away from one another, and are hardly likely to be amenable to synthesis and integration in any very significant way. In fact, the two sets of theories do not seem to have enough power or content to help one another along at all appreciably. So although there are countless questions which the economist would like the sociologist to answer for him, it is not clear how far the synthesizing of sociological theory with economic theory will help. However, it is very difficult for an economist unversed in sociological theory to judge, as the authors do not make much concession to those unfamiliar with their terminology and modes of expression. It may seem confounded cheek for an economist to complain of the jargon of another discipline, but the risk must be taken. Some, perhaps much, of the sociological theory with which the authors wish economic theory to be synthesized, seems to be more or less taxonomic, and either does not overlap with economic theory, or does so without promising much illumination from any synthesis. Alternatively, it seems often very difficult to tell how far the propositions of general sociological theory are communicating important new insights or, possibly, may simply be dressing up rather insubstantial generalisations in technical jargon. For example, the first two main conclusions regarding the relation between economic theory and the general theory of social systems are stated as follows: (1) " Economic Theory is a special case of the general theory of social systems and hence of the general theory of action ": and (2) " An Economy, as the concept is usually formulated by economists, is a special type of social system" (p. 306). An economist who has not mastered the general theory of social systems may perhaps be unable to see what the cash value of these statements can be.

The fact is that the book seems to be written for sociologists by sociologists (though by sociologists with an excellent grasp of much of modern economic theory). They conduct their colleagues up to the boundaries of their subject and from the sociological side of the economic-sociological frontier point out to their audience accurately and illuminatingly some of the theoretical phenomena to be seen on the other side. An economist coming up to listen from the economic side of the boundary will recognise and appreciate the accuracy and up-to-dateness of the exposition as he glances back at his own territory behind him. But as he peers across the frontier into the (for him) "mists and mysteries" (Churchill), of the general theory of social systems, and the other more exaltedly theoretical features of the sociological landscape, he may wonder what there is in it for him. Perhaps a second volume is required, written from the opposite perspective, which will be more concerned to provide for economists, standing on their side of the frontier, a guide to modern sociological theories.

T. W. HUTCHISON.

A Theory of Economic-Demographic Development. By HARVEY LEIBENSTEIN. Princeton University Press. London: Geoffrey Cumberlege. 1954. xi+204 pp. 32s.

The aim of this essay is admirable—to study under what conditions and by what means a "Malthusian" or under-developed society, characterised by high birth rates, low expectation of life and low average real income, may be started on the road towards a "non-Malthusian" goal of lower birth rates, high expectation of life and high average income. Such a study must involve the skilful interplay of economic and demographic concepts, and it is no surprise to find that the author starts with a simple static Malthusian situation in which population structure and size are being just maintained by a subsistence income distribution.

Two dynamic modifications of this aggregative model are elaborated, the important analytical ingredients being the population multiplier m, operating on population size, and another multiplier M, operating on the amount by which average income exceeds the Malthusian subsistence income, to produce the corresponding quantities in the succeeding period. In the first dynamic model, m is treated as an increasing function, eventually a constant, of average income. The conclusion drawn is that only if $m < M$ can the Malthusian condition be cured and there is a certain minimum injection of additional average income which will achieve this. In the second dynamic model, m is eventually a decreasing function of average income and the cure is always possible but again requires a certain minimum injection.

Subsequent analysis must therefore be directed towards a study of how m and M are affected by controllable or exogenous factors, a subject not satisfactorily resolved by the author, and of how the initial injection (or series of injections) is to be administered. On this latter topic the author suggests that labour-elastic will be more efficient than labour-inelastic capital investment, e.g. in a society with a large agricultural labour force the introduction of agricultural machinery is less likely to produce the instability desired than the construction of a transportation system. An attempt is made to elaborate the aggregative model into a multi-sectoral model, but little progress is made.

This first theory of economic-demographic development, necessarily oversimplified and essentially qualitative, is prodded along by the much abused instrument of elementary mathematics. By the time the author reaches Chapters VIII and IX on value-systems and optimum population theory the instrument is so blunted as to be ineffective. The precise prod has given way to the prolonged butting of undeveloped mathematical axioms and formal abstractions.

There are good ideas here which need further clarification and, despite the author's view, this reviewer would like to see a closer link-up with the empirical work of the U.S. Office of Population Research, the sponsors of this book.

JOHN AITCHISON.

Federal Reserve Operations in the Money and Government Securities Markets. By ROBERT V. ROOSA. Federal Reserve Bank of New York. 1956. 108 pp.

This book deserves a warm welcome, first, because of its clarity and mastery of technical detail and, second, because of the circumstances of its publication. Its author, an officer of the Federal Reserve Bank of New York, is an economist with intimate knowledge and experience of the Federal Reserve's operations in the New York money market. Yet it is not Mr. Roosa alone who should be congratulated. It says much for the Federal Reserve authorities themselves that they have permitted this material to be published. In a sense, Mr. Roosa has given away no secrets. For obvious reasons, he has not been free to comment upon policy matters as such, nor on the effects of action taken ; but by recounting in some detail the way in which operations are conducted and the technical aims of the authorities he has materially added to the public's understanding of the workings of the money market and the objectives of official action.

The discussion centres on the trading desk at the Federal Reserve Bank of New York, where—under the continuous direction of the Federal Open Market Committee—all outright market transactions in Government securities for the whole Federal Reserve System are negotiated. An attempt has been made to define what a money market is and the author makes the important point that in serving a dynamic society market arrangements are necessarily very fluid. The primary emphasis is on operations in the Government securities market and the New York Fed.'s relations with the dealers. But the author has also been concerned to define the nature of the built-in links with other markets and, in particular, the vital rôles played by the Federal funds market and the dealer loan mechanism in spreading the effects of official action throughout the country. In addition, the internal arrangements of the Fed. have been discussed at some length—the organisation of the Securities Department within the Fed. in New York, a " day's work " at the trading desk there, the preparation and use made of statistical " projections ", trading methods, and the means whereby liaison is maintained with the Federal Open Market Committee.

The contrast between the way central bank operations in London are shrouded in secrecy and this frank discussion of the technical side of Federal

Reserve activities is very marked indeed. Its purpose is not merely to educate the financial community in the Fed.'s objectives and techniques, but also the public as a whole. Its virtue is two-fold—the stimulation of constructive criticism and the increased co-operation that wider public knowledge can be expected to elicit. In both respects this book represents a very sound investment.

J. S. G. Wilson.

Food and Inflation in the Middle East 1940–1945. By E. M. H. Lloyd. Food Research Institute, Stanford University Press. Oxford University Press. 1956. xvi+375 pp. 48s.

This book is the ninth of the series of twenty projected by the Stanford University Food Research Institute on food and agriculture during World War II, and, as the title makes clear, it fits into the group dealing with the problems of specific regions. The author, a senior official of the Ministry of Food in *both* World Wars, was Economic Adviser to the British Minister of State in the Middle East in 1943 and 1944.

Part I is an economic geography of certain parts of the Middle East, more or less at the outset of World War II. The qualification " certain parts " should be noted as it quickly becomes apparent that the author is concerned with the countries under the ægis of the war-time Middle East Supply Centre. Turkey is therefore omitted altogether and the peripheral territories such as Ethiopia and the Somalilands receive far less detailed treatment than Egypt, Palestine, etc. Part II traces the emergence and history of the Middle East Supply Centre during the war. This is essentially a record of the rivalries, friendly and not so friendly, of the principalities, parliaments and powers of the Middle East in the early years of the war. Part III shows how M.E.S.C. gradually came to exercise overriding responsibility for collecting foodstuffs produced locally, programming and controlling food imports and distributing the available supplies. The near breakdown of several local administrations emerges very clearly from the account. Part IV describes the starting of inflation and shows how this was principally attributable to Allied Military expenditure. The attempts to arrest it through sales of gold and rough and ready rationing methods are discussed in some detail. Parts V and VI deal with more specialised topics—the history of individual foodstuffs such as rice and sugar and the attempts to improve local production by anti-locust and other scientific aids. The title of Part VII, " Retrospect and Prospect ", indicates its contents.

Mr. Lloyd has performed a notable service in bringing together and analysing a great deal of material which might otherwise have been lost to view. Whether economists, as distinct from historians or food administrators, will derive so much benefit from it is perhaps more open to doubt. This point is illustrated most clearly in Part IV (" Inflation ") which is much more inclined to *rapportage* than economic analysis. One also feels that an opportunity was missed in Part VII in which, despite its title, there is no reference either to the political changes or the development of oil which have made the Middle East a different world from what it was twenty or even ten years ago. Nevertheless, we can all ponder over the revealing anecdote (p. 188) about the tribesmen of Ethiopia who prefer salt to silver dollars as currency because, as they explained, " we cannot eat dollars ".

A. R. Prest.

Graduate Employment: a sample survey. By P.E.P. George Allen & Unwin Ltd. 1956. xiii + 300 pp. 30s.

The investigation reported in this volume is the first section of a three-fold study of Industry and the Graduate planned by P.E.P. In the first part, the only section so far completed, the aim was " to discover the jobs to which graduates leaving industry in Great Britain are going, the influences that determine their choice of employment, and to relate this information to such factors as age, sex, parental occupation, university attended, course taken and degree obtained ". The second part, which was to have explored the views of the universities on education for industry, has been postponed; but the third division, dealing with the policy and practice of industrial undertakings in employing graduates, will be published at a later date.

In view of the effort being made to provide a university education for all who are capable of benefiting from it, it is clearly of great importance to know what type of work is being chosen by graduates, and what progress they make. To discover this, P.E.P. in 1954 sent out a questionnaire to a one-in-six sample of the 13,500 men who took a first degree in arts, science or technology at a university or university college in Great Britain in the academic year 1949–50. 4,535 completed forms (a 66 per cent. response) were received and of these 3,961 were analysed. Questions covered such matters as type of school, faculty at university, class of degree, influences in choice of job, job chosen, changes and reason for changes of jobs (if any), starting salary, and salary at time of survey.

In considering the usefulness of this survey, it might be argued that 1950 was an unsuitable year to choose as those taking a degree that year included a large number of ex-servicemen whose age, experience and family responsibilities might well influence their choice of job. As men of this type would not appear in anything like the same proportion in later generations of graduates, this sample might be thought atypical. On examining the questionnaire, however, differences in replies do not seem to have been related to differences in age and this objection does not appear to be valid.

The report, with its mine of statistical tables, contains no startling discoveries, but many points of interest and some matters which call for further investigation. In view of the publicity which has been given to the shortage of teachers, it is perhaps surprising to find that out of the 3,951 graduates studied, 925 or 23·4 per cent. went into teaching, nearly as many as entered manufacturing industry. More needs to be known of the one in six graduates who entered industry but who left it during the period under review, not to find other industrial employment, but to take up a different type of work.

The investigation into salaries was extensive and revealing and showed that faculty, class of degree, and choice of employment all affected salary levels. In the examination of starting salaries, science men were seen to be beginning at a higher rate than arts graduates, with technologists lowest. On the other hand, salaries for graduates with some years' experience showed technologists at the top of the list, with arts graduates fallen to third place. Both in starting salaries and in salaries for those with experience, there was a positive relationship between the class of degree and the level of salary, though in the experienced group the salary differential in relation to degree class had narrowed. A very important factor in determining salary was the type of employment chosen. An interesting table of current (1954) salaries for men with first class honours and some years' experience showed a median salary of £787 p.a. in industry, compared with £686 p.a. in teaching, £673 p.a. in the Civil Service, and £650 p.a. in the universities.

The survey contains a considerable fund of information about one generation of graduates. It is interesting, but would be of much greater value if the whole of the planned investigation could be completed, and if the survey could be repeated at a later date for comparative purposes.

NANCY SEEAR.

Distribution's Place in the American Economy Since 1869. By HAROLD BARGER. Princeton University Press. London: Cumberlege. 1955; xviii + 222 pp. 36s. net.

This book is Number 58 in the General Series of the National Bureau of Economic Research, and in it Professor Barger has made another distinguished contribution to the establishment and interpretation of statistical series, this time in a field which has rarely been explored. A mass of information has been collected and digested and presented in an agreeable form; moreover, though the volume is commendably brief, the reader is told all he might wish to know about the sources of information and the procedures employed. And, where appropriate, the author is a helpful critic of his own statistics and methods.

In successive chapters data are presented on employment, output, productivity, costs, channels, and margins and spreads in the distributive trades. Barger summarises his main findings as follows: " Since the 1920's the fraction of the labour force engaged in distributing commodities has increased sharply, while the fraction engaged in producing commodities has declined, though not so sharply. Output per man-hour in distributing commodities increased, although much less rapidly than in their production. Finally, the distributor's share of the retail sales dollar showed neither an upward nor a downward trend. " Statistical data for the period before the First World War are far less complete and reliable. But Barger seems to have located and made use of a wide range of available material; and his study of these suggests that trends in this earlier period were much the same as those in the later, except that the distributor's share of the retail sales dollar increased slowly between 1869 and 1914.

Professor Barger's tenacious efforts to find material to serve as statistical stepping-stones, particularly in the earlier periods, led him to a wide miscellany of sources. He gives several glimpses of the non-statistical aspects of some of his discoveries. Can he be persuaded to write an economic history of American distribution, building on but supplementing his present work ? Clearly he is well qualified to do so.

B. S. YAMEY.

The Future of Sterling. By A. C. L. DAY. Clarendon Press, Oxford. 1954. Reprinted 1956. vii + 227 pp. 15s.

A special poltergeist has repeatedly prevented the appearance in *Economica* of a notice of this stimulating and provocative volume. To review it now, with nearly four years' hindsight, is a difficult exercise; it is far from easy to recall precisely the situation of sterling when Mr. Day wrote in 1953, nor would it be fair to catalogue the events which have not justified Mr. Day's pessimism, Fortunately that would not be the relevant way to assess the book. It is not a work of detailed research and analysis, but a tract for the times, and it is high praise to say that it is still worth reading. Mr. Day's main thesis is to challenge the desirability of convertibility as an objective of British monetary policy. Primarily his case rests on the view that there will, as far ahead as matters, always be a dollar problem, and that " the high-noon of sterling's power " cannot be re-established; persistence in the effort would bring upon the British economy costs that far outweigh any advantages. Mr. Day's alternative was to substitute a combined E.P.U.—sterling area currency union.

Events since he wrote have not, on the whole, been kind to Mr. Day. Non-dollar currencies have shown more resilience than he foresaw, although the real advance towards convertibility has not perhaps been as marked as recent I.M.F. statements suggest. But events have not made his book irrelevant; his thoughtful and temperate discussion of issues that still remain is only incidentally dependent upon the conditions of 1953.

S. J. BUTLIN.

SHORTER NOTICES

Chemical Process Economics in Practice. Edited by J. JAMES HUR. Reinhold Publishing Corporation, New York. Chapman & Hall Ltd. 1956. iv+115 pp. 32s.

Each contributor to this volume, which is the report of a conference held under the auspices of the University of Pennsylvania, is employed by a large business corporation in the U.S.A. In the preface reference is made to " the eulogy each speaker so richly deserves for the excellent contributions timelessly recorded herein." Thus, one is led to expect big things, such as an exposition of the foundations of a new science, economico-chemistry, especially when bearing in mind the successful unions of chemistry with physics and biology. However, this is not to be. Instead one is provided with a series of unsophisticated statements on the problems of accounting in enterprises with durable capital goods.

Models of Man. By HERBERT A. SIMON. John Wiley & Sons Inc., New York. Chapman & Hall Ltd. 1957. xiv + 287 pp. 40s.

Professor Simon's subtitle is " Mathematical Essays on Rational Human Behaviour in a Social Setting ". His interests are extremely widespread in the social sciences and he has written on most of them. What he does in this volume is to collect together sixteen of his articles, to order them in such a way as to " set forth a consistent body of theory of the rational and non-rational aspects of human behaviour in a social setting ", and to add some new material which serves to link the various essays together. The arrangement is under four headings : causation and influence relations ; social processes; motivation; rationality and administrative decision making. The articles have appeared in no fewer than thirteen periodicals, including standard journals in economics, statistics, biometrics, psychology, sociology, public opinion, politics and philosophy. Scarcely anyone can have pursued Professor Simon's writings in all these publications; it is now possible to do so.

American Economic History. By GEORGE H. SOULE and VINCENT P. CAROSSO. The Dryden Press, New York. 1957. xvi + 654 pp. $6.

An economist and a historian have combined to produce this latest addition to the crop of text-books on American economic history, an enlargement and revision of Professor Soule's earlier *Economic Forces in American History.* The emphasis is placed heavily on more recent history, well over one-third of the text being devoted to the period since 1914. The book provides a useful introduction both to the facts of American economic development and to methods of elementary economic analysis. It is copiously illustrated with excellent charts, graphs, maps, tables and photographs. This is, however, an *édition de luxe* and few readers in this country will be able to avail themselves of so elaborate—and expensive—a work.

A Primer of Input-Output Economics. By WILLIAM H. MIERNYK. Northeastern University, Bureau of Business and Economic Research. Boston, Mass. iii + 33 pp. $1.

This brief statement of the construction and interpretation of an input-output table is clear and fairly precise, and is as good as most other elementary introductions to this important topic. It has, however, some deficiencies which might have been avoided. First, the meaning of the matrix of direct and indirect coefficients is not explained as the solution to a system of simultaneous equations. This could have been done by means of a simple arithmetic example. Second, although input-output theory is described historically as a development of general equilibrium theory, no explanation is offered of how the tableau may be interpreted in orthodox economic terms. Third, the usefulness of input-output to government and business is not set out in sufficient detail.

Avskrivning og Skattlegging. (Samfunnsøkonomiske Studier.) STATISTISKE CENTRALBYRÅ, Oslo. 1956. 85 pp. Kr. 3.

The English title of this work is " Depreciation and Taxation ". It is one of a series of Studies carried out by the Norwegian Central Statistical Office. There are three parts. The first of these is a general theoretical account of the nature of depreciation, possible differences in its taxation treatment and the effects of changes in such treatment. The analysis is elementary but elegant. Part II contains a fairly detailed survey of the rules relating to depreciation for taxation purposes in Norway and a less detailed survey of the provisions in a number of other countries. The final Part compares the laws in the countries surveyed. The major matters examined are the depreciation base and method, depreciation rates, accelerated amortisation, carry forward, loss offsets and the treatment of profits arising on realisation. The publication is provided with an English index and a three-page English summary.

The Investigation of National Income in British Tropical Dependencies. By A. R. PREST. Athlone Press (for University of London). 1957. 32 pp. 4s. 6d. net.

This is the fourth in the series of Commonwealth Papers published under the auspices of the Institute of Commonwealth Studies, University of London. In it the author, a noted practitioner and expositor of the art of national income calculation, explains clearly and briefly the ideas involved in national income accounting, the difficulties encountered in devising and preparing national income tables for colonial-type territories, and the uses to which the calculations can be put.

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